

FEATURES

- **DESIGNED FOR AC/DC SWITCHING APPLICATIONS**
- **IDEAL FOR ANALOG SIGNAL CONTROL APPLICATIONS**
- **LOW LED OPERATING CURRENT:**
 $I_F = 2 \text{ mA}$
- **LOW OFFSET VOLTAGE**
- **SMALL PACKAGE:**
6 Pin DIP

DESCRIPTION

PS7112-1A and PS7112L-1A are solid state relays containing a GaAs LED on the light emitting side (input side) and MOSFETs on the output side.

APPLICATIONS

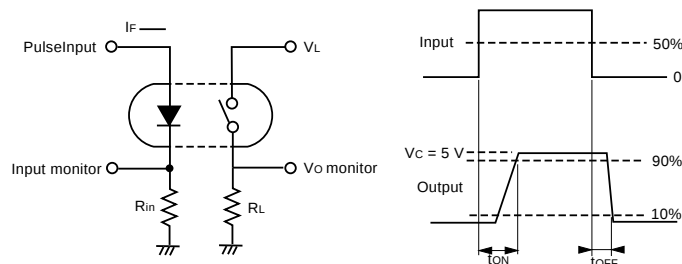
- VOICE TELEPHONY
- AUDIO EQUIPMENT
- AUDIO INSTRUMENTATION

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

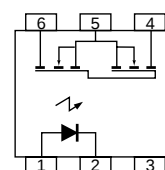
PART NUMBER				PS7112-1A, PS7112L-1A		
SYMBOLS		PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V_F	Forward Voltage, $I_F = 10 \text{ mA}$	V		1.2	1.4
	I_R	Reverse Current, $V_R = 5 \text{ V}$	μA			5.0
MOSFET	I_{OFF}	Off-State Leakage Current, $V_D = 100 \text{ V}$	μA		0.03	1
	C_{OUT}	Output Capacitance, $V_D = 0 \text{ V}$, $f = 1 \text{ MHz}$			57	
Coupled	I_{Fon}	LED On-state Current, $I_L = 200 \text{ mA}$	mA			2.0
	R_{ON1}	On-State Resistance, $I_F = 10 \text{ mA}$, $I_L = 10 \text{ mA}$ $I_F = 10 \text{ mA}$, $I_L = 200 \text{ mA}$, $t \leq 10 \text{ ms}$	Ω		3.0	6.0
	R_{ON2}					
	t_{ON}	Turn-on Time $I_F = 10 \text{ mA}$, $V_O = 5 \text{ V}$, $PW \geq 10 \text{ ms}$	ms		0.1	0.4
	t_{OFF}	Turn-off Time $I_F = 10 \text{ mA}$, $V_O = 5 \text{ V}$, $PW \geq 10 \text{ ms}$	ms		0.03	0.2
	$R_{\text{I-O}}$	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		1.1	

Note:

1. Test Circuit for Switching Time:



PS7112-1A, PS7112L-1A

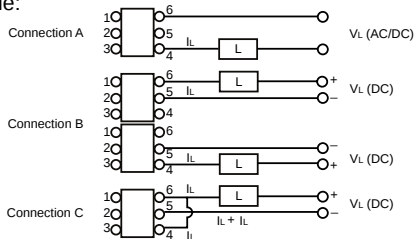


PS7112-1A, PS7112L-1A

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
P _D	Power Dissipation	mW	50
I _{FP}	Peak Foward Current ²	A	1
MOSFET			
V _L	Break Down Voltage	V	100
I _L	Continuous Load Current ³	mA	200
	Connection A		
	Connection B		
I _{LP}	Pulse Load Current ⁴ (AC/DC Connection)	mA	400
	Connection C		
P _D	Power Dissipation	mW	560
Coupled			
BV	Isolation Voltage ⁵	V _{R.M.S.}	1500
P _T	Total Power Dissipation	mW	610
T _{OP}	Operating Temperature	°C	-40 to +80
T _{STG}	Storage Temperature	°C	-40 to +100

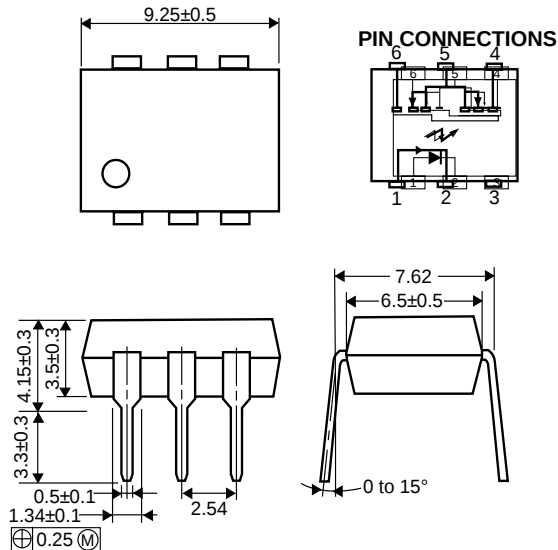
- Notes:
- Operation in excess of any one of these parameters may result in permanent damage.
 - PW = 100 μs, Duty Cycle = 1 %
 - Conditions: I_F ≥ 2 mA. The following tupes of load connections are available:



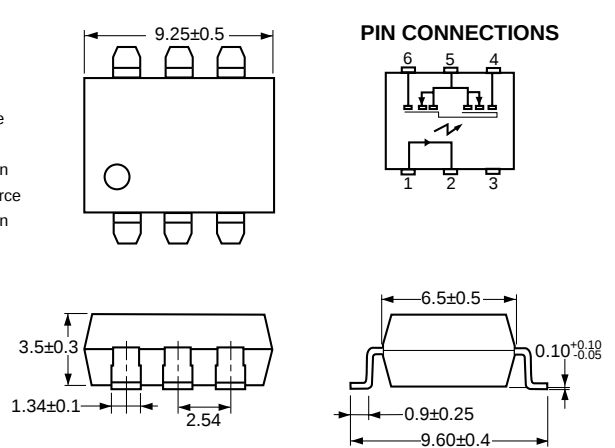
- PW = 100 ms, 1 shot.
- AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.

OUTLINE DIMENSIONS (Units in mm)

PS7112-1A

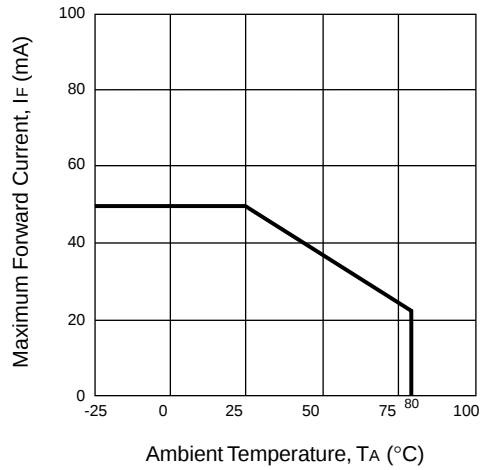


PS7112L-1A

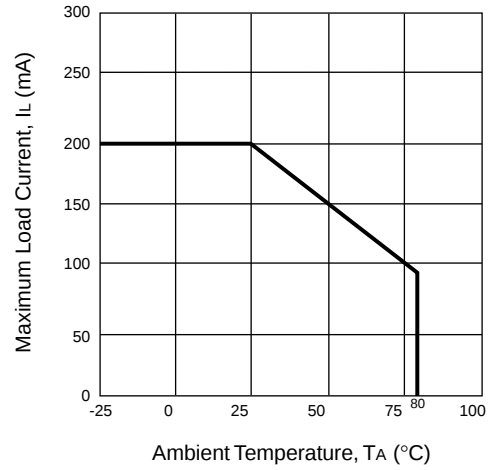


TYPICAL PERFORMANCE CURVES ($T_A = 25\text{ }^{\circ}\text{C}$)

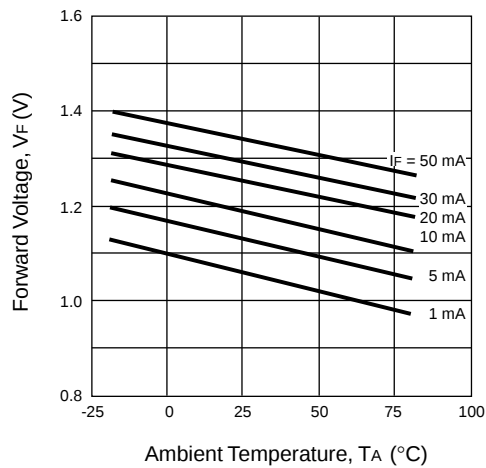
**MAXIMUM FORWARD CURRENT
vs. AMBIENT TEMPERATURE**



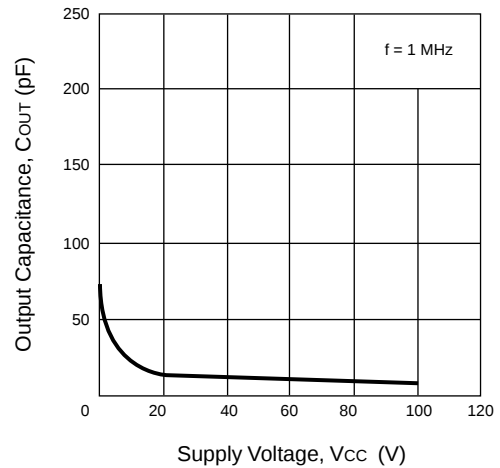
**MAXIMUM LOAD CURRENT
vs. AMBIENT TEMPERATURE**



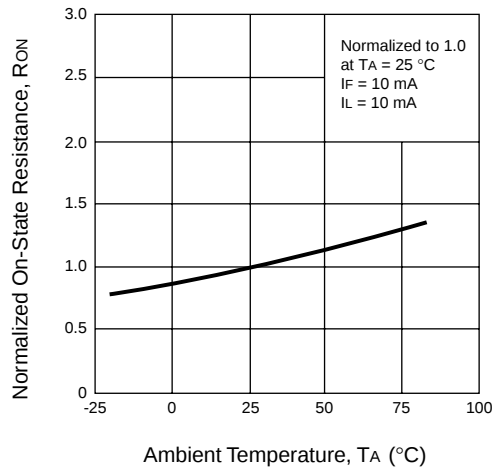
**FORWARD VOLTAGE vs.
AMBIENT TEMPERATURE**



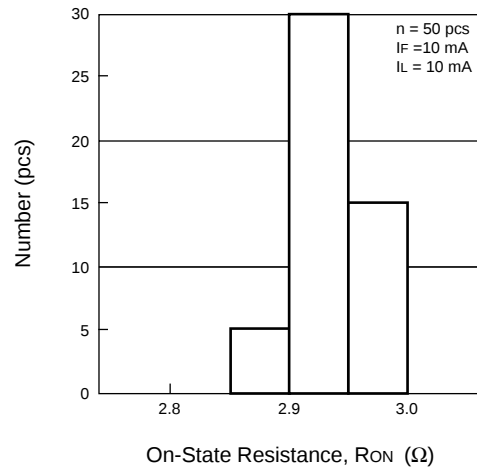
**OUTPUT CAPACITANCE
vs. SUPPLY VOLTAGE**



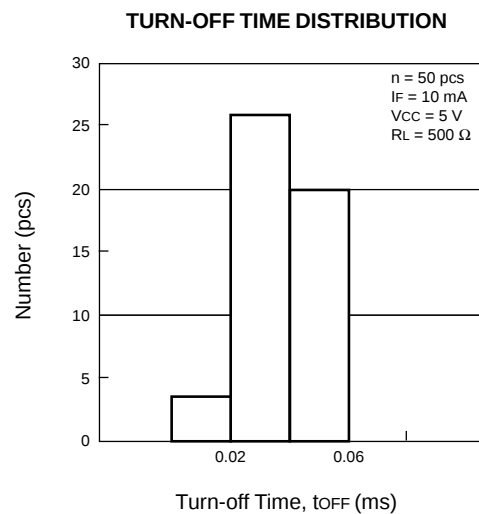
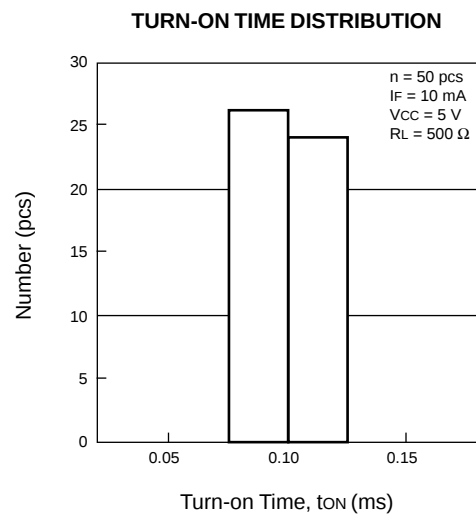
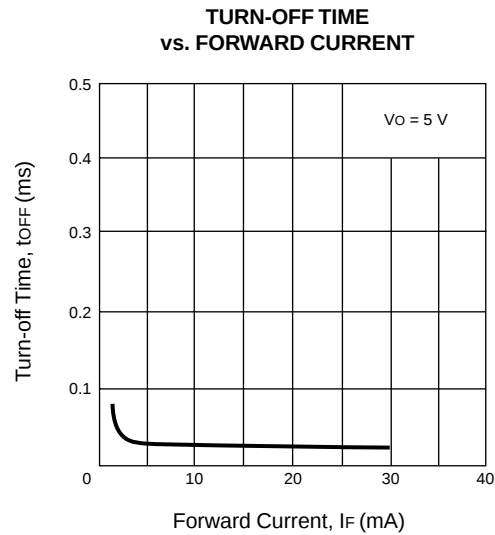
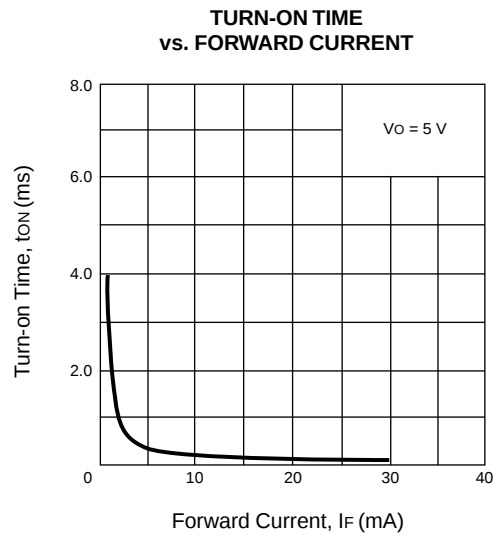
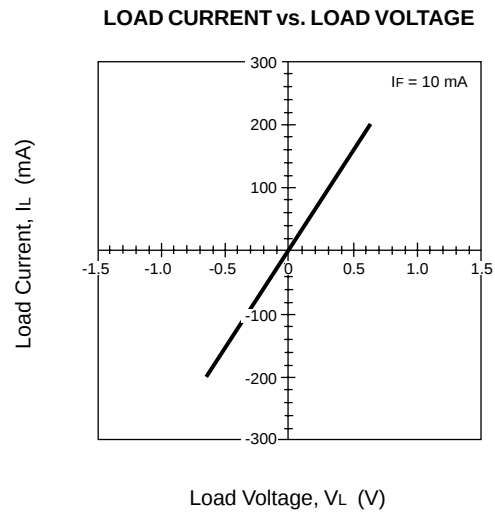
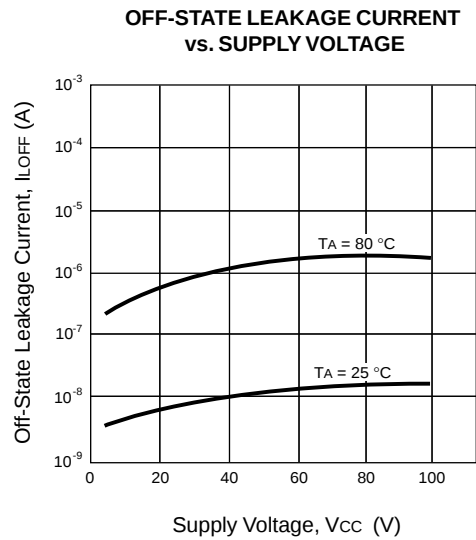
**NORMALIZED ON-STATE RESISTANCE
vs. AMBIENT TEMPERATURE**



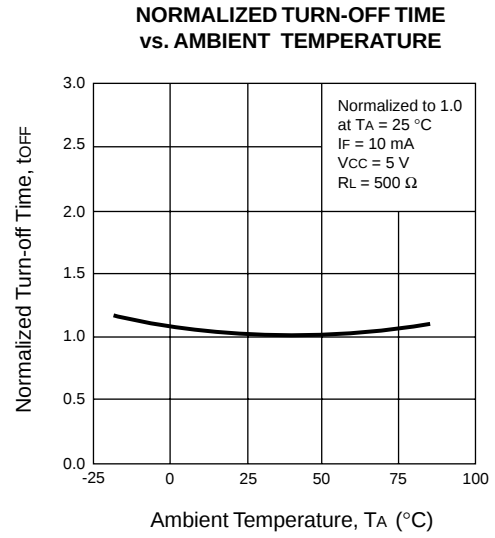
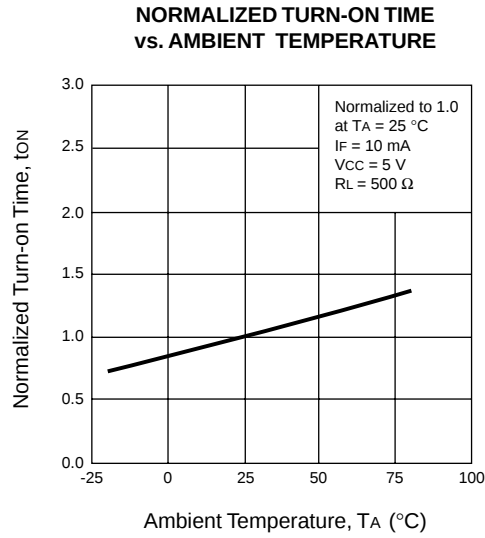
ON-STATE RESISTANCE DISTRIBUTION



TYPICAL PERFORMANCE CURVES (TA = 25 °C)

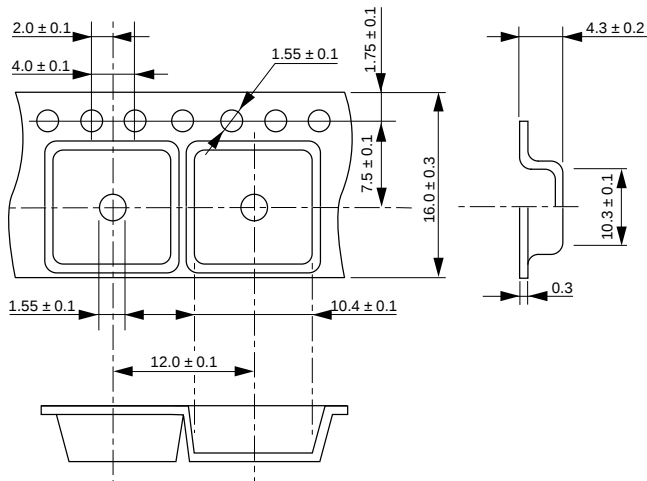


TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

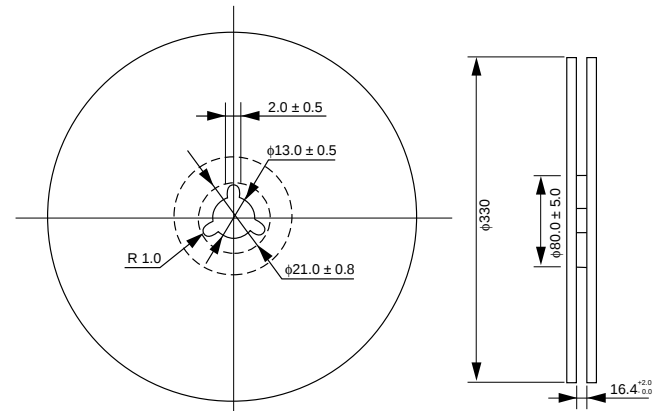


TAPING SPECIFICATIONS (Units in mm)

OUTLINE AND DIMENSIONS (TAPE)

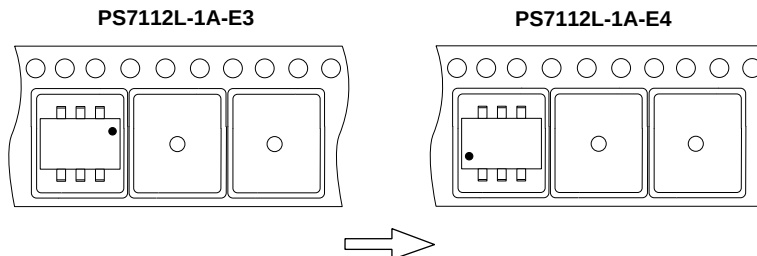


OUTLINE AND DIMENSIONS (REEL)



Packaging : 1000 pcs/reel

TAPING DIRECTION

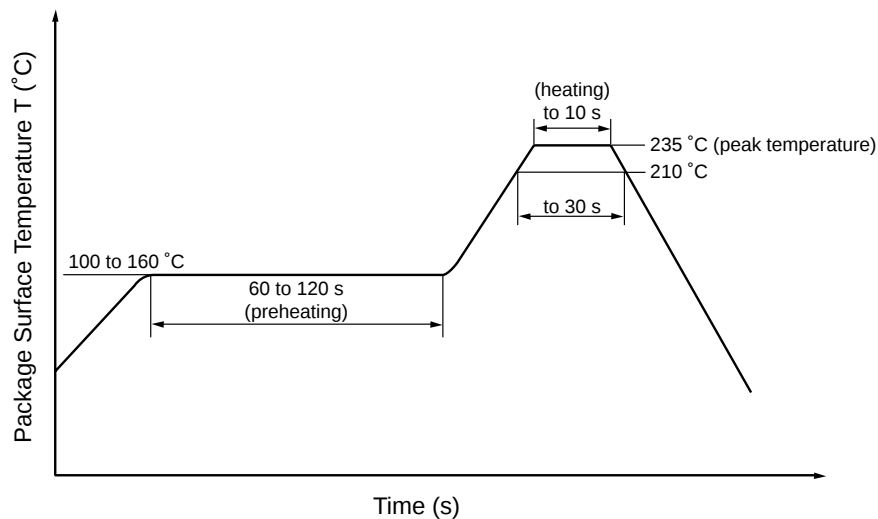


RECOMMENDED SOLDERING CONDITIONS

(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.

Mouser Electronics

Authorized Distributor

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CEL:

[PS7112-1A](#) [PS7112L-1A](#)