

PS7342-1A,PS7342L-1A

6-PIN DIP, HIGH ISOLATION VOLTAGE
400 V BREAK DOWN VOLTAGE
NORMALLY OPEN TYPE
1-ch Optical Coupled MOS FET

-NEPOC Series-

DESCRIPTION

The PS7342-1A and PS7342L-1A are solid state relays containing GaAs LEDs on the light emitting side (input side) and MOS FETs on the output side.

They are suitable for analog signal control because of their low offset and high linearity.

The PS7342L-1A has a surface mount type lead.

FEATURES

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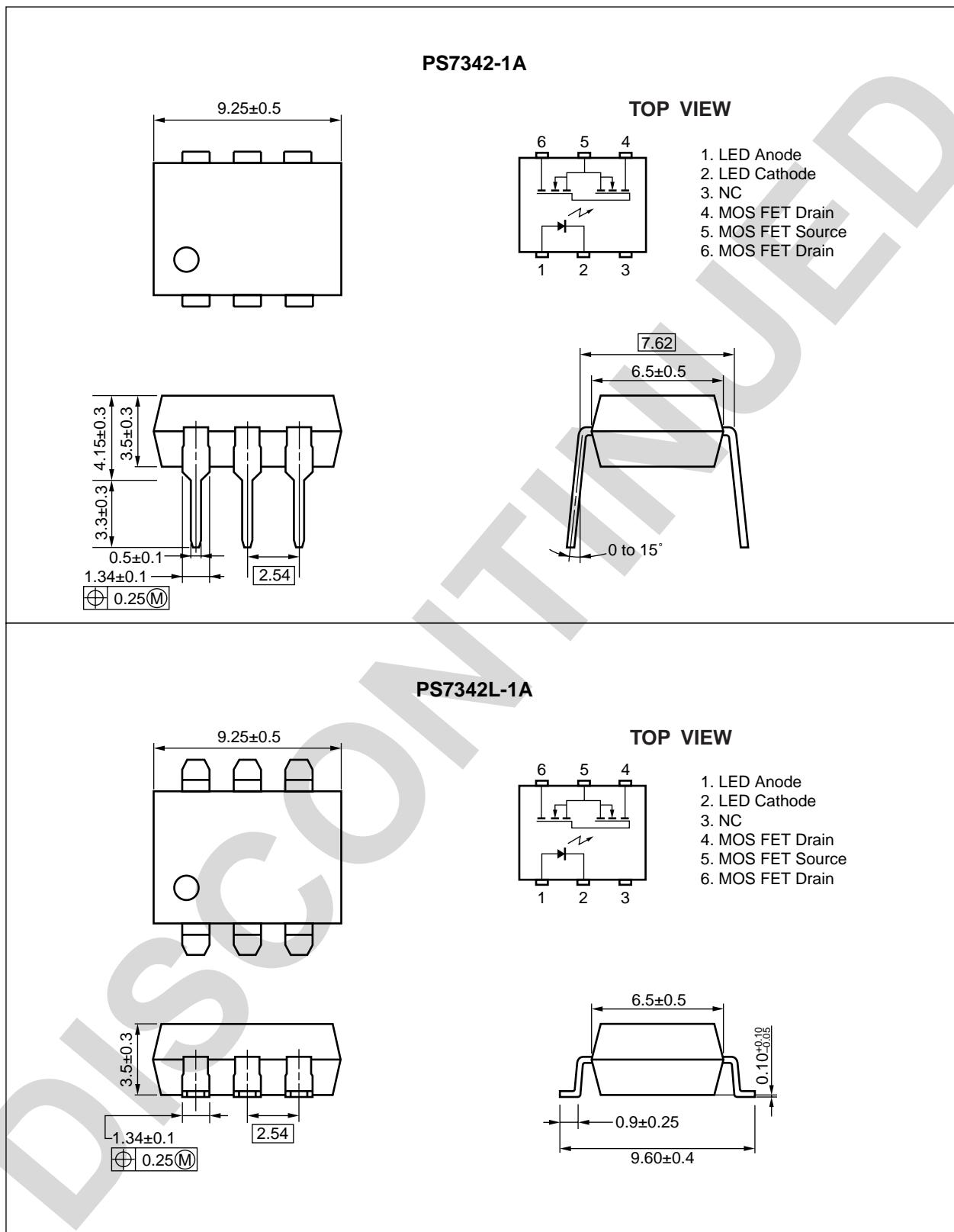
- High isolation voltage ($BV = 3\ 750\ V_{r.m.s.}$)
- 1 channel type (1 a output)
- Low LED Operating Current ($I_F = 2\ mA$)
- Designed for AC/DC switching line changer
- Small package (6-pin DIP)
- Low offset voltage
- Ordering number of taping product : PS7342L-1A-E3, E4: 1 000 pcs/reel
- Pb-Free product
- Safety standards
 - UL approved: File No. E72422
 - BSI approved: No. 8252/8253
 - CSA approved: No. CA 101391
 - SEMKO approved: No. 606398
 - DEMKO approved: No. 309836
 - NEMKO approved: No. P00100964
 - FIMKO approved: No. FI 15188
 - DIN EN60747-5-2 (VDE0884 Part2) approved (Option)

APPLICATIONS

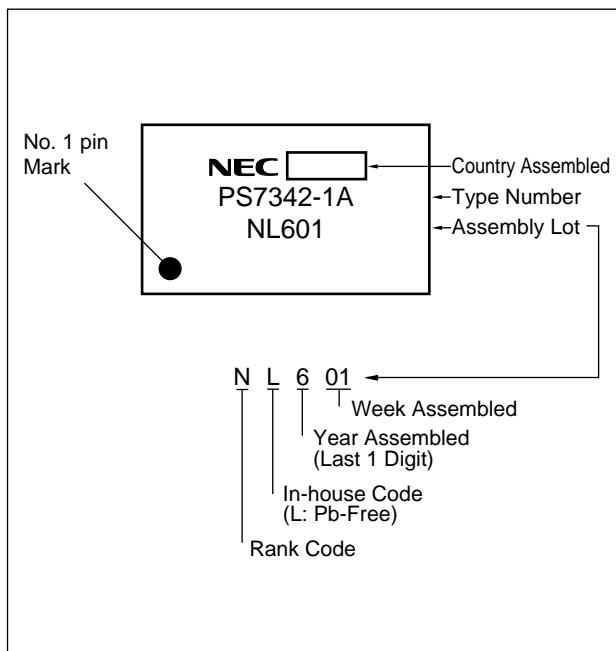
- Exchange equipment
- Measurement equipment
- FA/OA equipment

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PACKAGE DIMENSIONS (in millimeters)



<R> MARKING EXAMPLE



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ORDERING INFORMATION

Part Number	Order Number	Solder Plating Specification	Packing Style	Safety Standard Approval	Application Part Number ^{*1}
PS7342-1A	PS7342-1A-A	Pb-Free	Magazine case 50 pcs	Standard products (UL, BSI, CSA, SEMKO, DEMKO, NEMKO, FIMKO approved)	PS7342-1A
PS7342L-1A	PS7342L-1A-A				
PS7342L-1A-E3	PS7342L-1A-E3-A		Embossed Tape 1 000 pcs/reel		
PS7342L-1A-E4	PS7342L-1A-E4-A				

*1 For the application of the Safety Standard, following part number should be used.

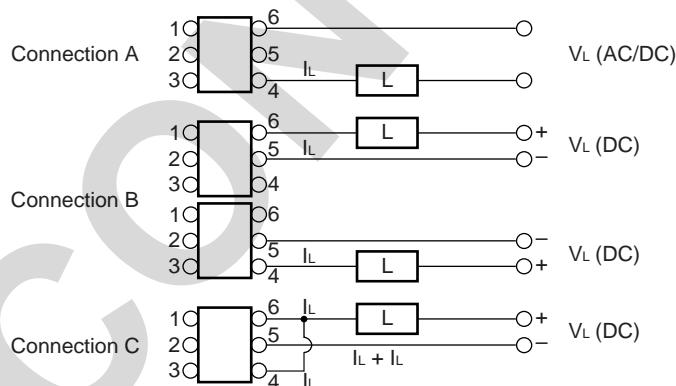
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ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

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	400	V
	Continuous Load Current ^{*2}	I_L	200	mA
			250	
			400	
	Pulse Load Current ^{*3} (AC/DC Connection)	I_{LP}	400	mA
	Power Dissipation	P_D	560	mW
Isolation Voltage ^{*4}		BV	3 750	Vr.m.s.
Total Power Dissipation		P_T	610	mW
Operating Ambient Temperature		T_A	-40 to +85	°C
Storage Temperature		T_{stg}	-40 to +125	°C

^{*1} PW = 100 μs , Duty Cycle = 1%

^{*2} Conditions: $I_F \geq 2$ mA. The following types of load connections are available.



^{*3} PW = 100 ms, 1 shot

^{*4} AC voltage for 1 minute at $T_A = 25^\circ\text{C}$, RH = 60% between input and output

Pins 1-3 shorted together, 4-6 shorted together.

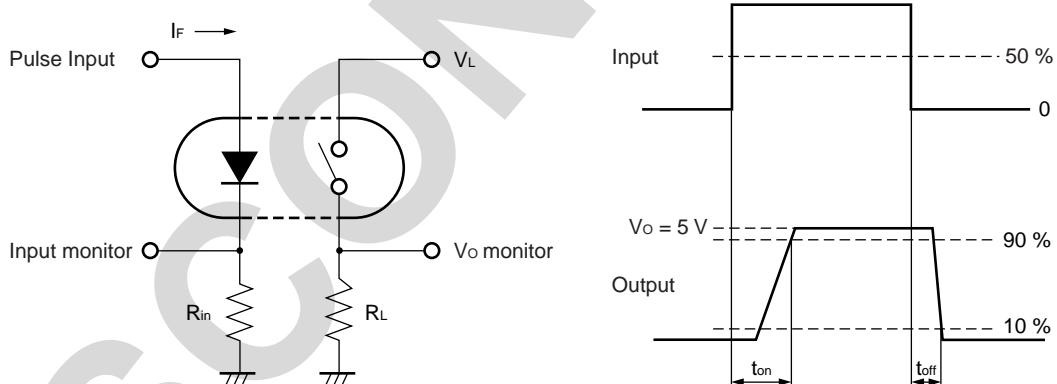
RECOMMENDED OPERATING CONDITIONS ($T_A = 25^\circ\text{C}$)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
LED Operating Current	I_F	2	10	20	mA
LED Off Voltage	V_F	0		0.5	V

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F $I_F = 10 \text{ mA}$		1.2	1.4	V
	Reverse Current	I_R $V_R = 5 \text{ V}$			5.0	μA
MOS FET	Off-state Leakage Current	I_{Loff} $V_D = 400 \text{ V}$		0.03	1.0	μA
	Output Capacitance	C_{out} $V_D = 0 \text{ V}, f = 1 \text{ MHz}$		225		pF
Coupled	LED On-state Current	I_{Fon} $I_L = 200 \text{ mA}$			2.0	mA
	On-state Resistance	R_{on1} $I_F = 10 \text{ mA}, I_L = 10 \text{ mA}$		6	10	Ω
		R_{on2} $I_F = 10 \text{ mA}, I_L = 200 \text{ mA}, t \leq 10 \text{ ms}$				
	Turn-on Time ^{1,2}	t_{on} $I_F = 10 \text{ mA}, V_o = 5 \text{ V}, R_L = 500 \Omega$		1.2	2.5	ms
	Turn-off Time ^{1,2}	t_{off} $PW \geq 10 \text{ ms}$		0.06	0.2	
	Isolation Resistance	R_{i-o} $V_{i-o} = 1.0 \text{ kVdc}$	10^9			Ω
	Isolation Capacitance	C_{i-o} $V = 0 \text{ V}, f = 1 \text{ MHz}$		1.1		pF

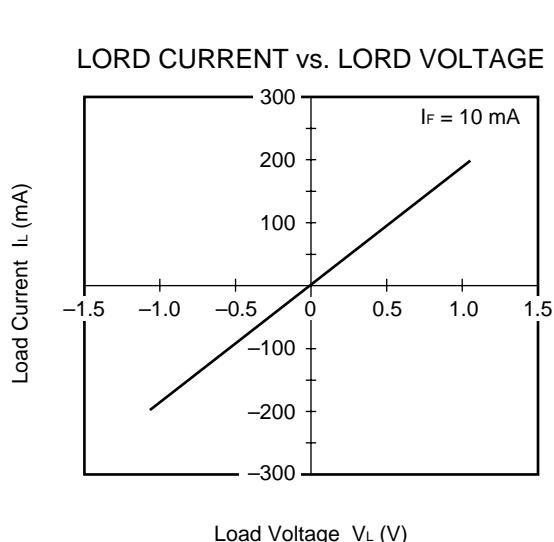
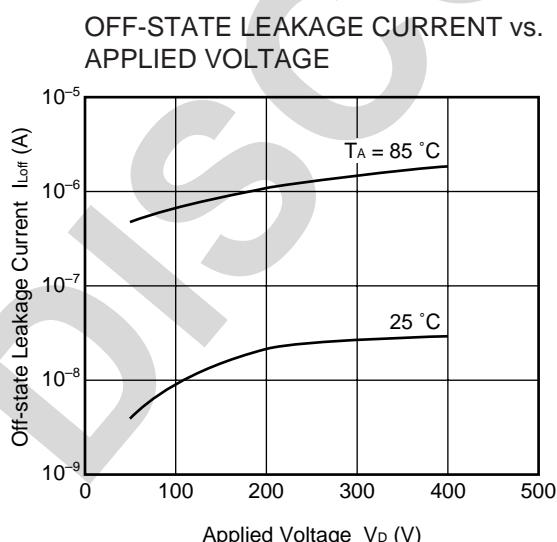
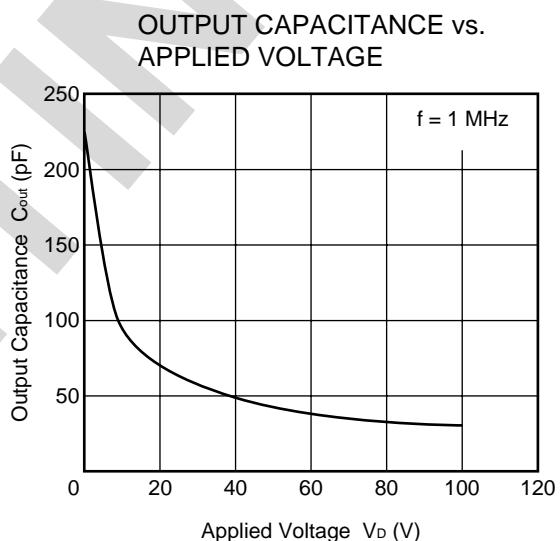
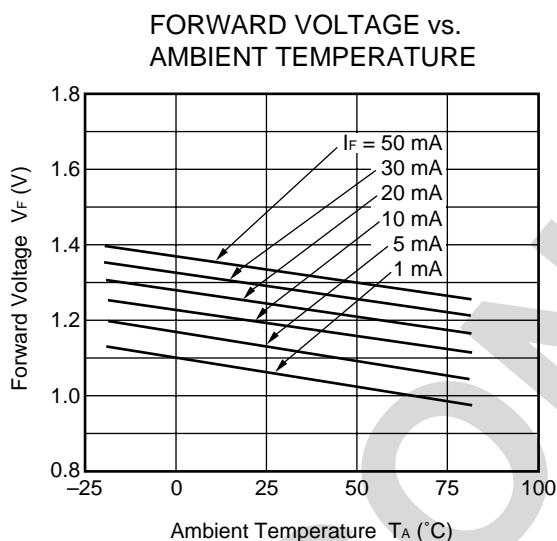
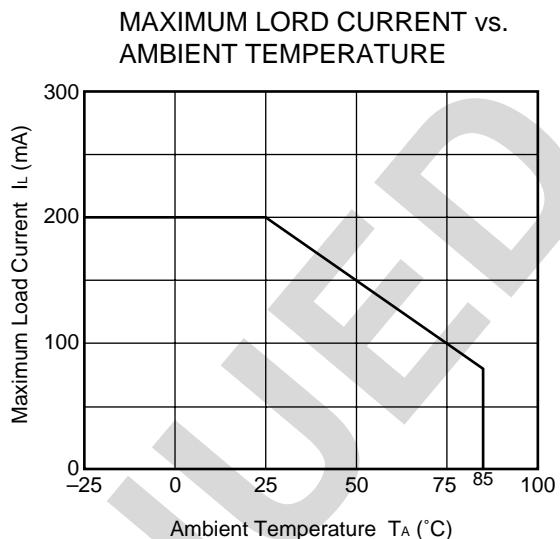
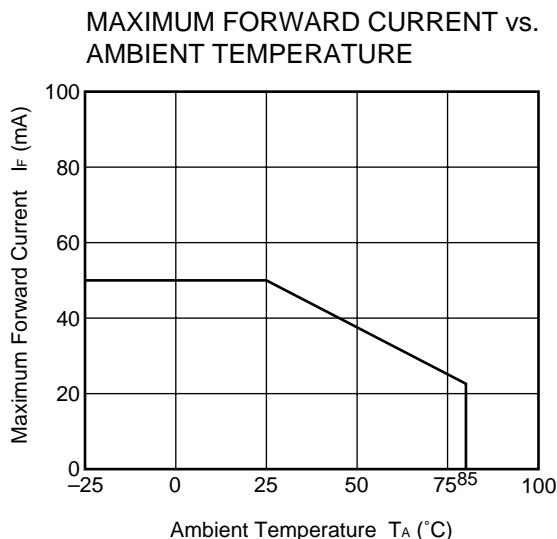
*1 Test Circuit for Switching Time



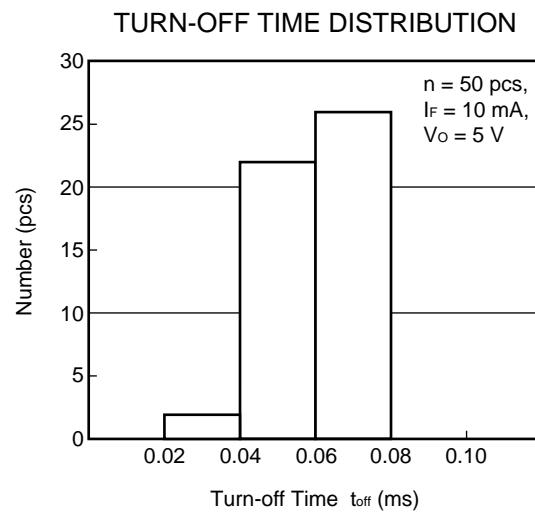
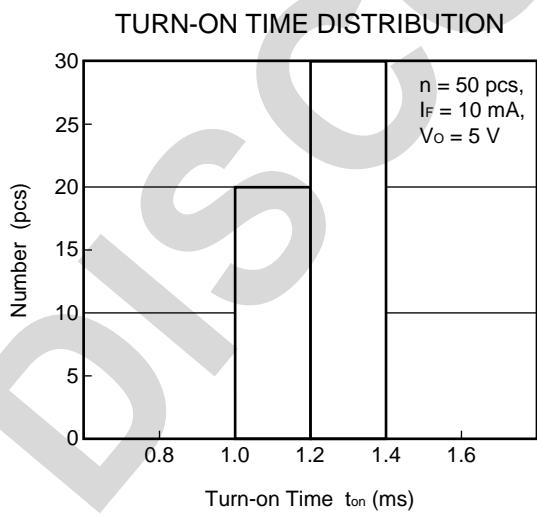
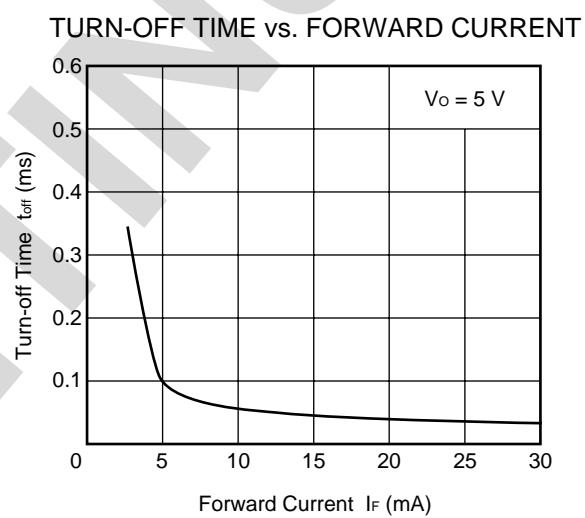
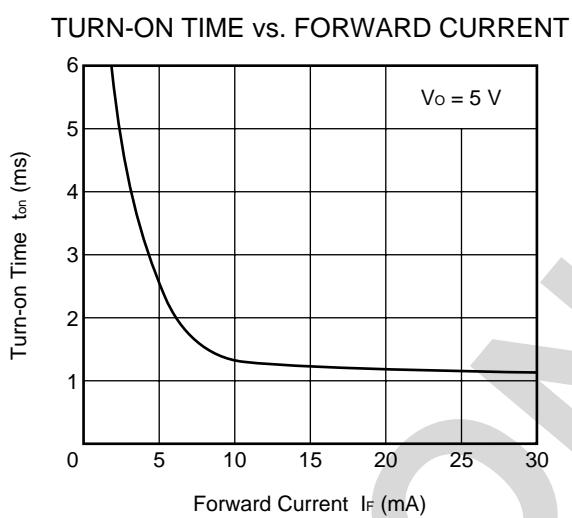
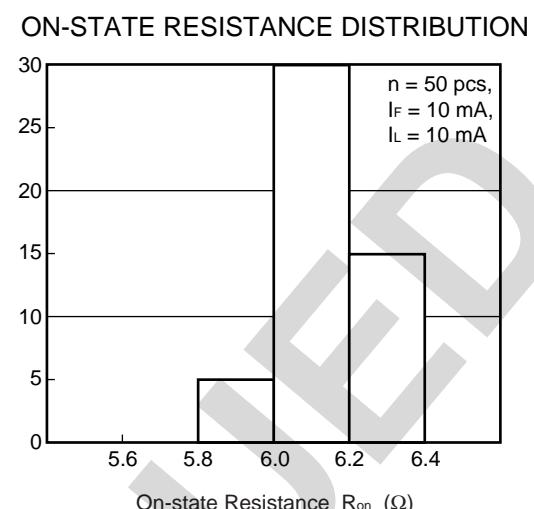
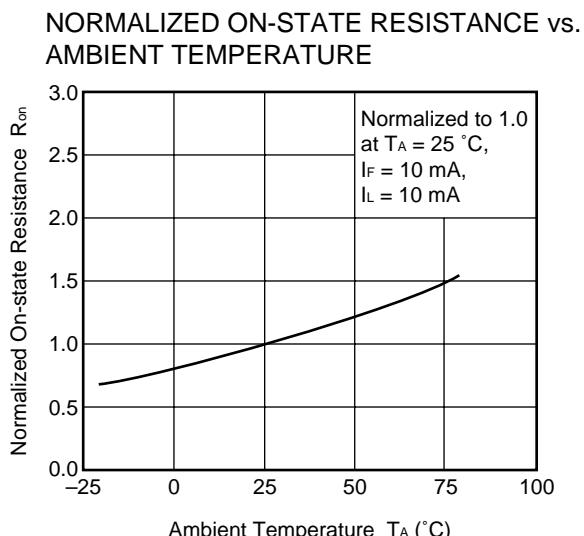
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*2 The turn-on time and turn-off time are specified as input-pulse width $\geq 10 \text{ ms}$.

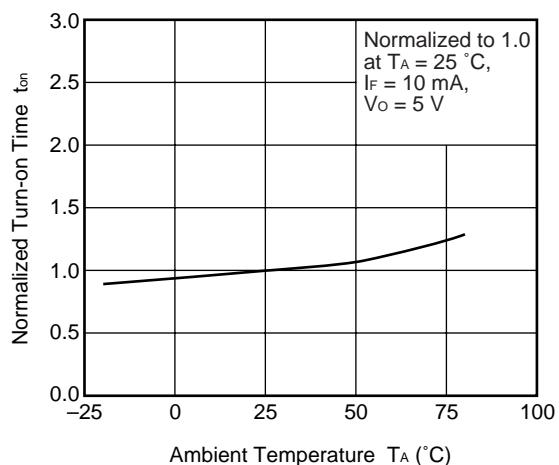
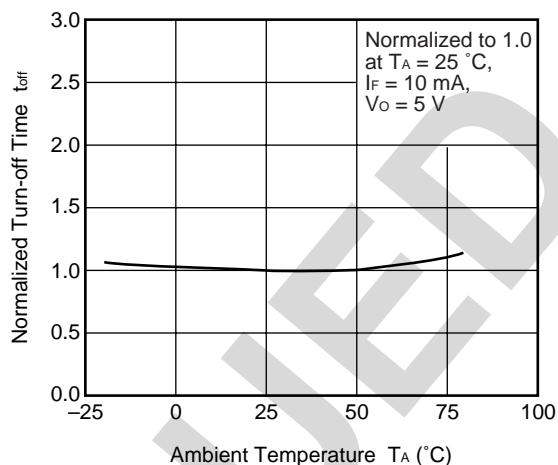
Be aware that when the device operates with an input-pulse width less than 10 ms, the turn-on time and turn-off time will increase.

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

Remark The graphs indicate nominal characteristics.



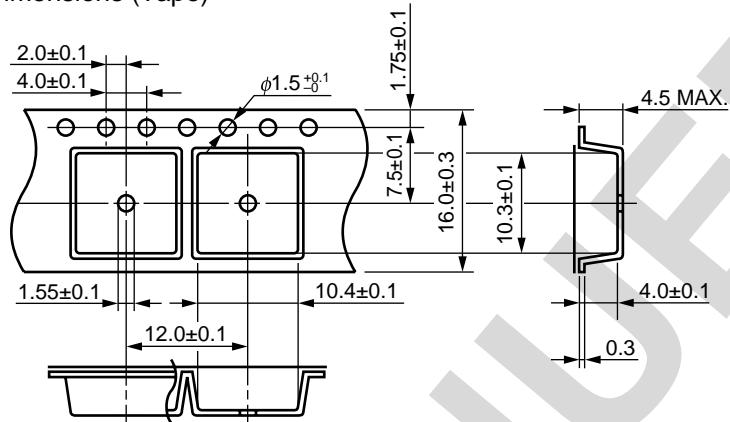
Remark The graphs indicate nominal characteristics.

NORMALIZED TURN-ON TIME vs.
AMBIENT TEMPERATURENORMALIZED TURN-OFF TIME vs.
AMBIENT TEMPERATURE

Remark The graphs indicate nominal characteristics.

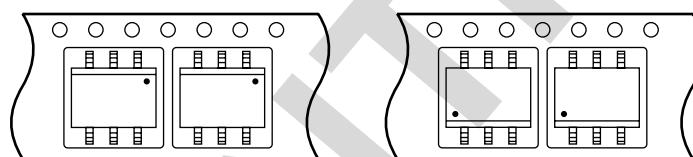
TAPING SPECIFICATIONS (in millimeters)

Outline and Dimensions (Tape)



Tape Direction

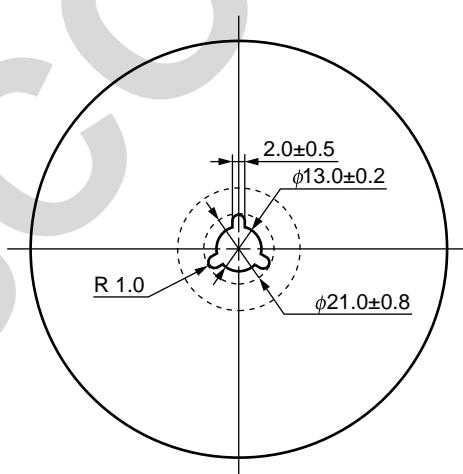
PS7342L-1A-E3



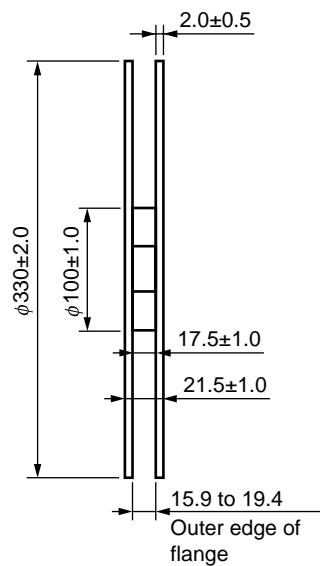
PS7342L-1A-E4



Outline and Dimensions (Reel)



Packing: 1 000 pcs/reel

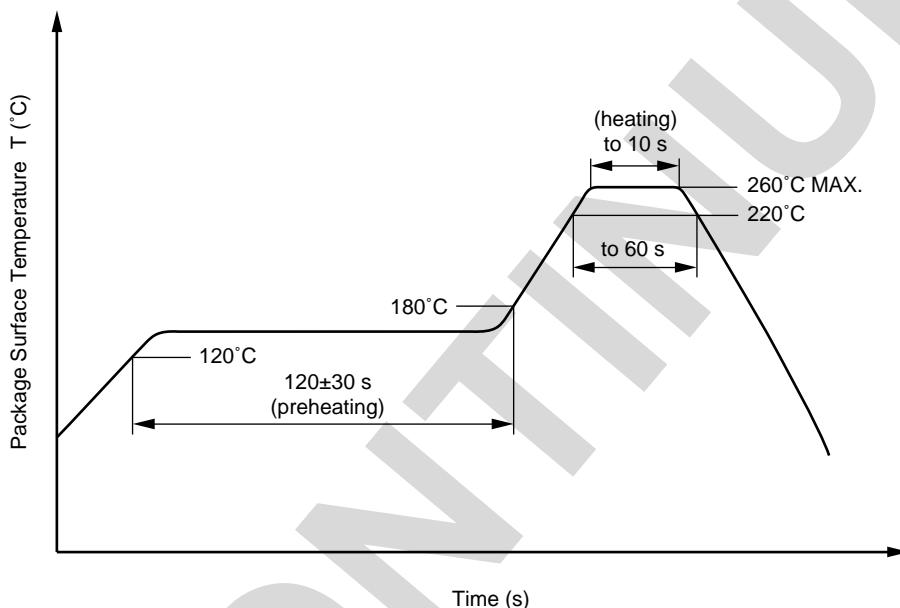


RECOMMENDED SOLDERING CONDITIONS

(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 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) 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.)

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(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

<R> • To avoid quality degradation, assembling within 1 month after take this device out from covered pack is required.
(Storage conditions 25°C, 65%RH MAX.)
• Fluxes

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

<R> USAGE CAUTIONS

1. Protect against static electricity when handling.
2. Avoid storage at a high temperature and high humidity.

DISCONTINUED

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This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.

- Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below.
- 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials.
- 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal.
- Do not burn, destroy, cut, crush, or chemically dissolve the product.
- Do not lick the product or in any way allow it to enter the mouth.

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