

**PS710B-1A, PS710BL-1A****6-PIN DIP, 0.05  $\Omega$  LOW ON-STATE RESISTANCE  
2.5 A CONTINUOUS LOAD CURRENT  
1-ch Optical Coupled MOS FET****DESCRIPTION**

The PS710B-1A and PS710BL-1A are solid state relays containing a GaAs LED input side and MOS FETs on the output side.

It is suitable for PLC, etc. because of its large continuous load current and low on-state resistance.

The PS710BL-1A has a surface mount type lead.

**FEATURES**

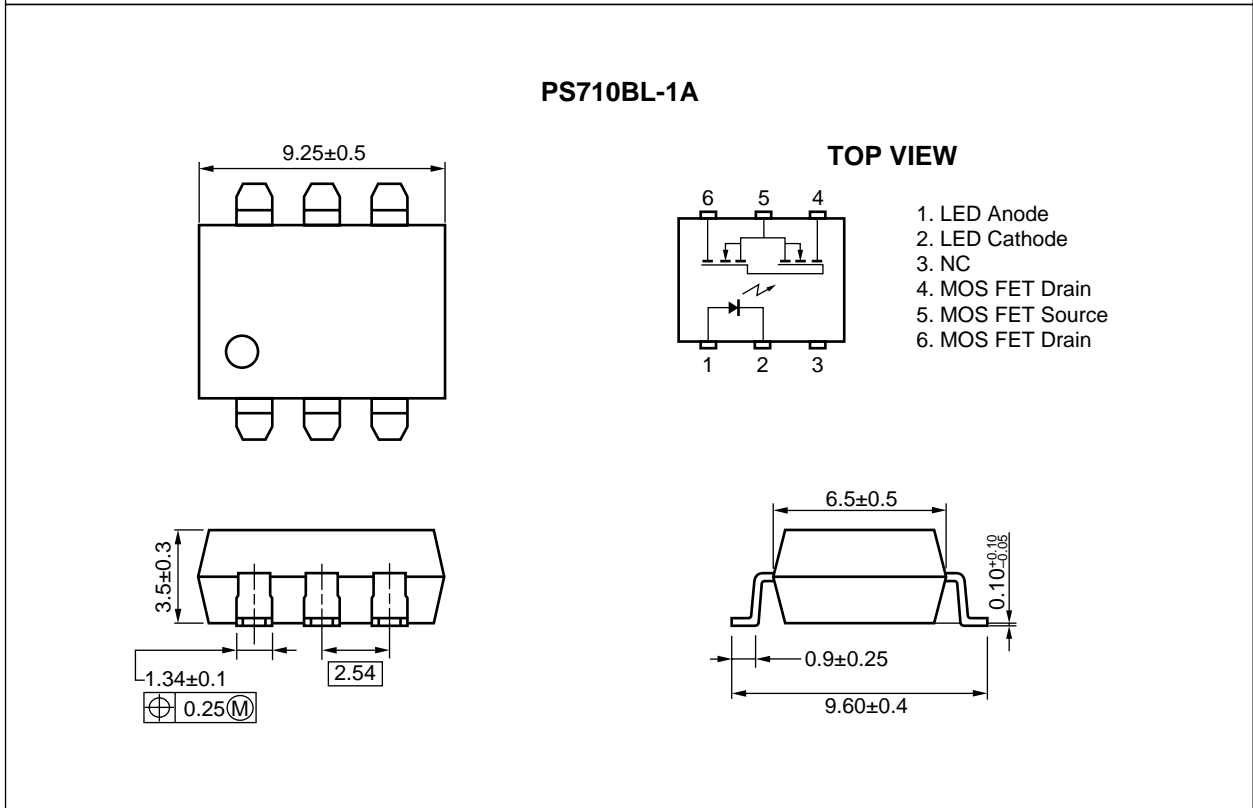
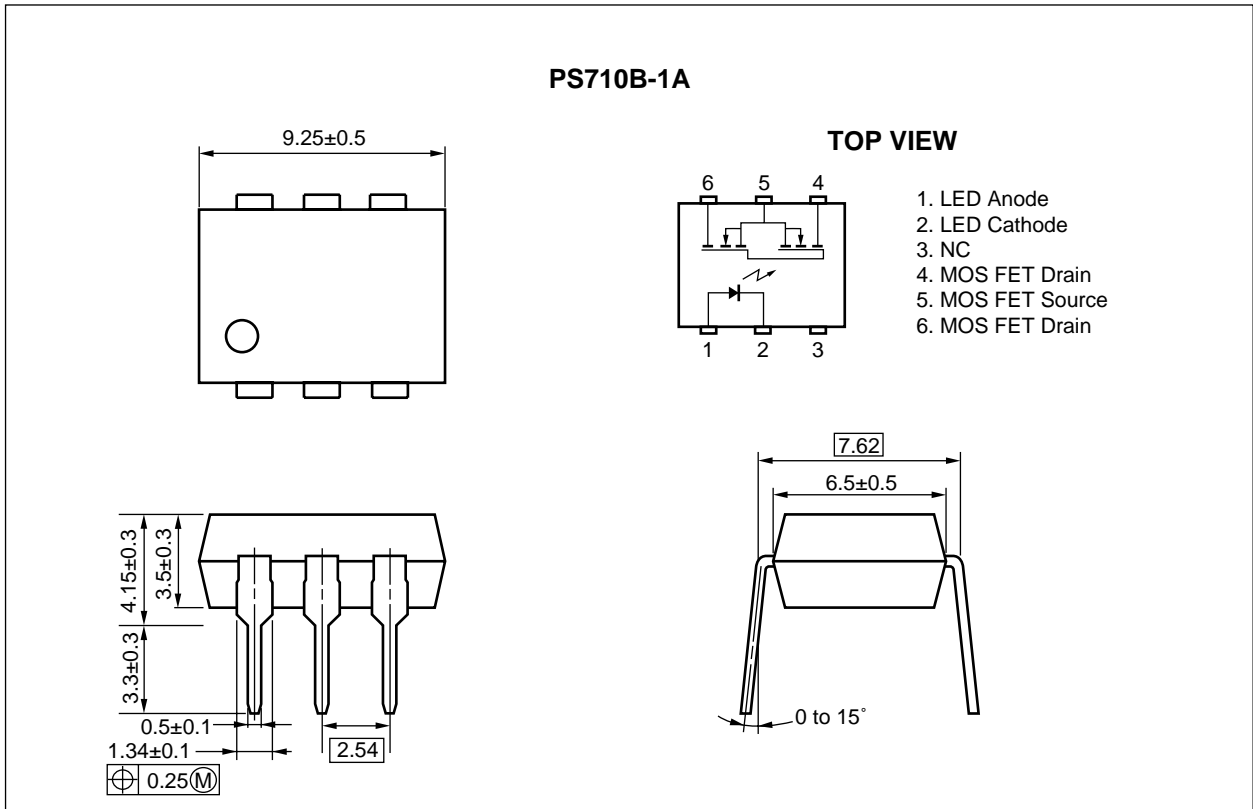
- Low on-state resistance ( $R_{on} = 0.05 \Omega$  TYP.)
- Large continuous load current ( $I_L = 2.5 A$ )
- 1 channel type (1 a output)
- Low LED operating current ( $I_F = 2 mA$ )
- Designed for AC/DC switching line changer
- Small package (6-pin DIP)
- Low offset voltage
- PS710BL-1A: Surface mount type

**APPLICATIONS**

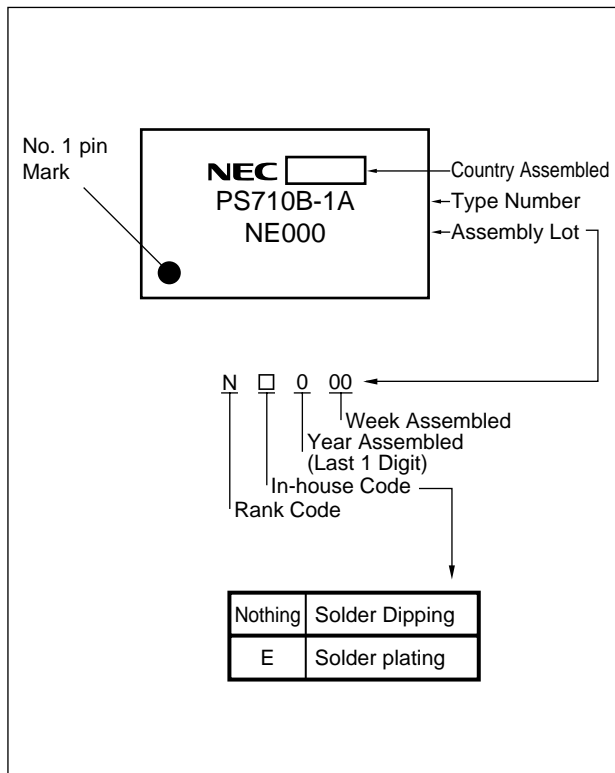
- Measurement equipment
- FA equipment

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PACKAGE DIMENSIONS (UNIT: mm)



MARKING EXAMPLE



**ORDERING INFORMATION**

Part Number	Package	Packing Style	Application Part Number <sup>*1</sup>
PS710B-1A	6-pin DIP	Magazine case 50 pcs	PS710B-1A
PS710BL-1A			PS710BL-1A
PS710BL-1A-E3		Embossed Tape 1 000 pcs/reel	
PS710BL-1A-E4			

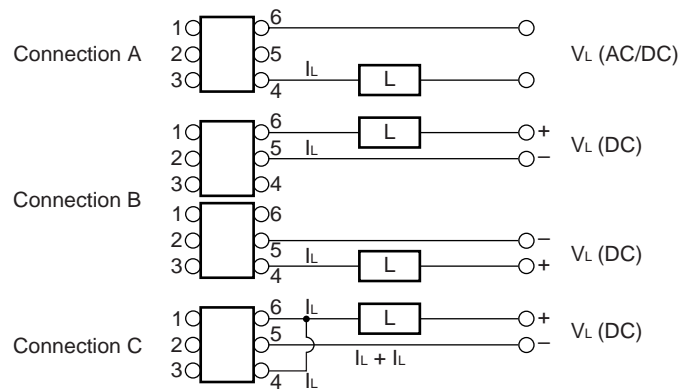
\*1 For the application of the Safety Standard, following part number should be used.

**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C, unless otherwise specified)**

Parameter		Symbol	Ratings	Unit	
Diode	Forward Current (DC)	I <sub>F</sub>	50	mA	
	Reverse Voltage	V <sub>R</sub>	5.0	V	
	Power Dissipation	P <sub>D</sub>	50	mW	
	Peak Forward Current <sup>*1</sup>	I <sub>FP</sub>	1	A	
MOS FET	Load Voltage	V <sub>L</sub>	60	V	
	Continuous Load Current <sup>*2</sup>	Connection A	I <sub>L</sub>	2.5	A
		Connection B		3.5	
		Connection C		5.0	
	Pulse Load Current <sup>*3</sup> (AC/DC Connection)	I <sub>LP</sub>	5.0	A	
Power Dissipation	P <sub>D</sub>	625	mW		
Isolation Voltage <sup>*4</sup>		BV	1 500	V <sub>r.m.s.</sub>	
Total Power Dissipation		P <sub>T</sub>	675	mW	
Operating Ambient Temperature		T <sub>A</sub>	-40 to +85	°C	
Storage Temperature		T <sub>stg</sub>	-40 to +100	°C	

\*1 PW = 100 μs, Duty Cycle = 1%

\*2 Conditions: I<sub>F</sub> ≥ 2 mA. The following types of load connections are available.



\*3 PW = 100 ms, 1 shot

\*4 AC voltage for 1 minute at T<sub>A</sub> = 25°C, RH = 60% between input and output

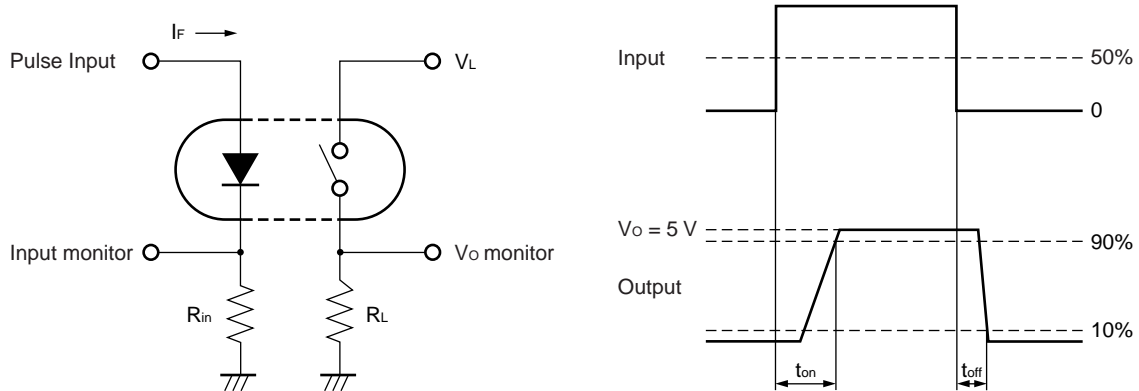
**RECOMMENDED OPERATING CONDITIONS (T<sub>A</sub> = 25°C)**

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
LED Operating Current	I <sub>F</sub>	2	10	20	mA
LED Off Voltage	V <sub>F</sub>	0		0.5	V

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 10 mA		1.2	1.4	V
	Reverse Current	I <sub>R</sub>	V <sub>R</sub> = 5 V			5.0	μA
MOS FET	Off-state Leakage Current	I <sub>Loff</sub>	V <sub>D</sub> = 60 V			50	nA
	Output Capacitance	C <sub>out</sub>	V <sub>D</sub> = 0 V, f = 1 MHz		500		pF
Coupled	LED On-state Current	I <sub>Fon</sub>	I <sub>L</sub> = 2.5 A			2.0	mA
	On-state Resistance	R <sub>on</sub>	I <sub>F</sub> = 10 mA, I <sub>L</sub> = 2.5 A, t ≤ 10 ms		0.05	0.1	Ω
	Turn-on Time <sup>*1,2</sup>	t <sub>on</sub>	I <sub>F</sub> = 10 mA, V <sub>O</sub> = 5 V, R <sub>L</sub> = 500 Ω, PW ≥ 10 ms		2.5	5.0	ms
	Turn-off Time <sup>*1,2</sup>	t <sub>off</sub>			0.05	0.2	
	Isolation Resistance	R <sub>I-O</sub>	V <sub>I-O</sub> = 1.0 kV <sub>DC</sub>		10 <sup>9</sup>		Ω
	Isolation Capacitance	C <sub>I-O</sub>	V = 0 V, f = 1 MHz		0.5		pF

**\*1 Test Circuit for Switching Time**

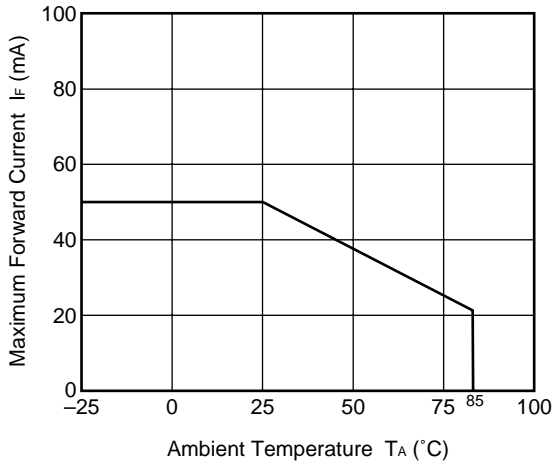


**\*2** The turn-on time and turn-off time are specified as input-pulse width ≥ 10 ms.

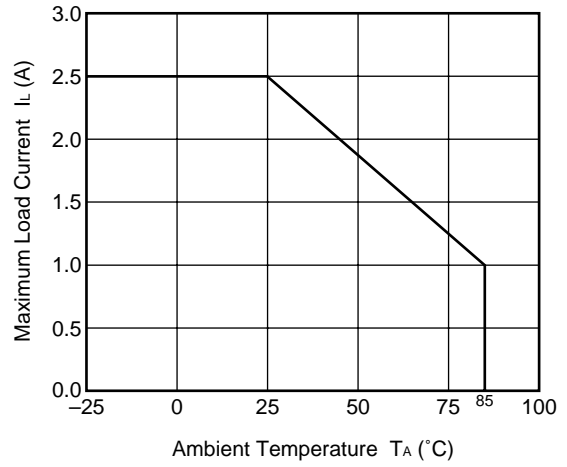
Be aware that when the device operates with an input-pulse width of under 10 ms, the turn-on time and turn-off time will increase.

TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C, unless otherwise specified)

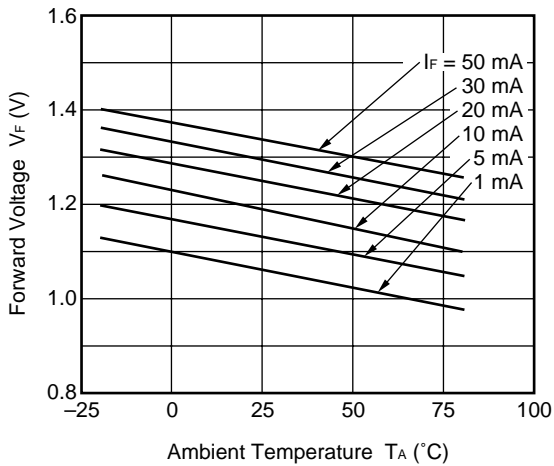
MAXIMUM FORWARD CURRENT vs. AMBIENT TEMPERATURE



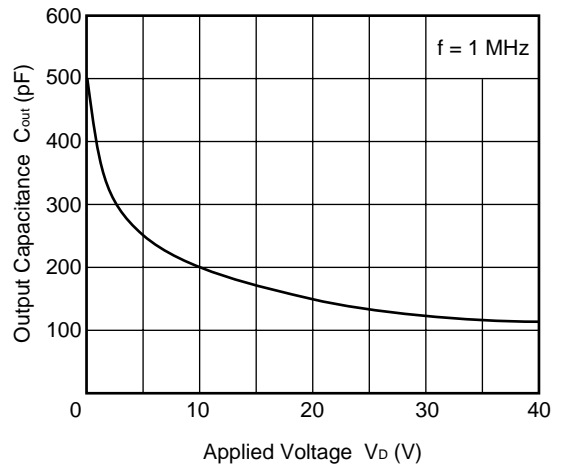
MAXIMUM LOAD CURRENT vs. AMBIENT TEMPERATURE



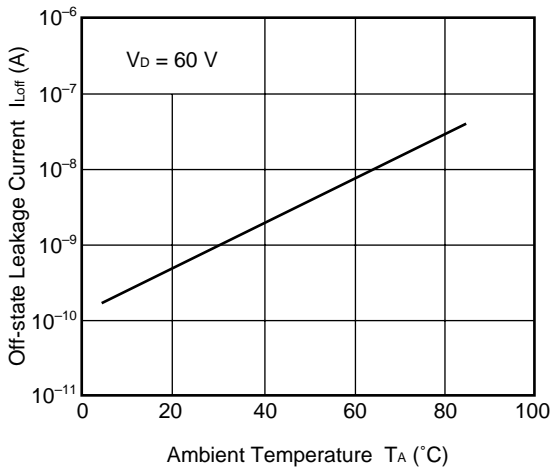
FORWARD VOLTAGE vs. AMBIENT TEMPERATURE



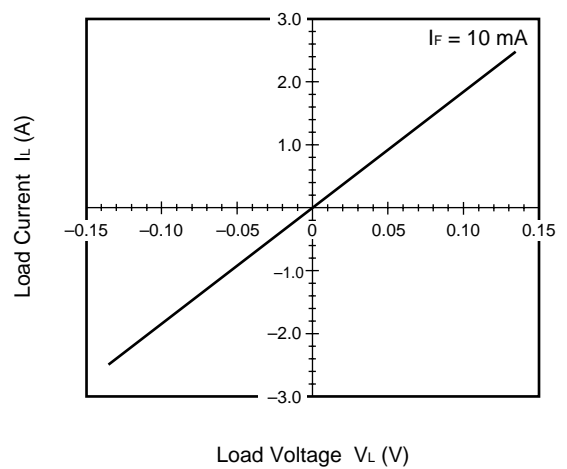
OUTPUT CAPACITANCE vs. APPLIED VOLTAGE



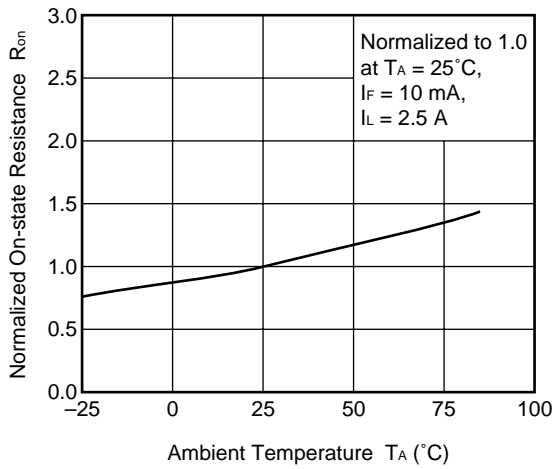
OFF-STATE LEAKAGE CURRENT vs. AMBIENT TEMPERATURE



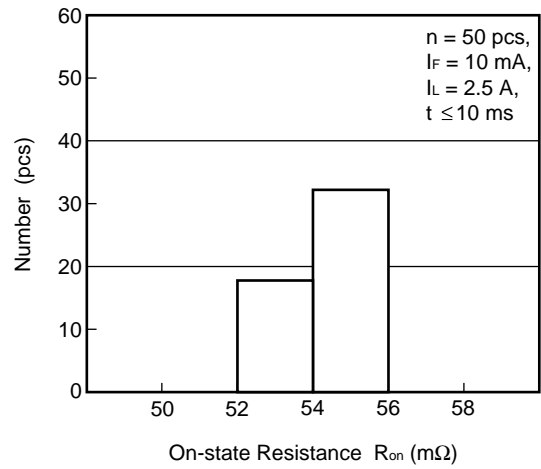
LOAD CURRENT vs. LOAD VOLTAGE



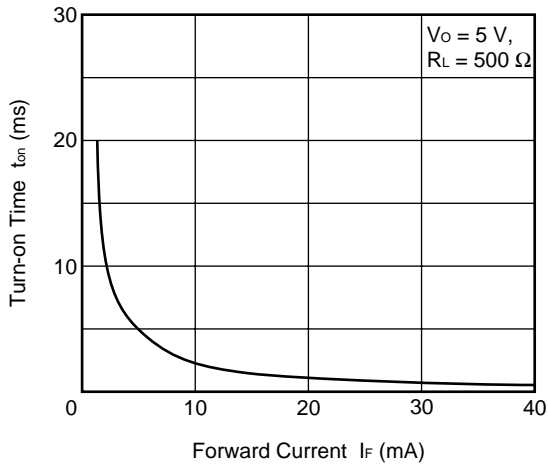
NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



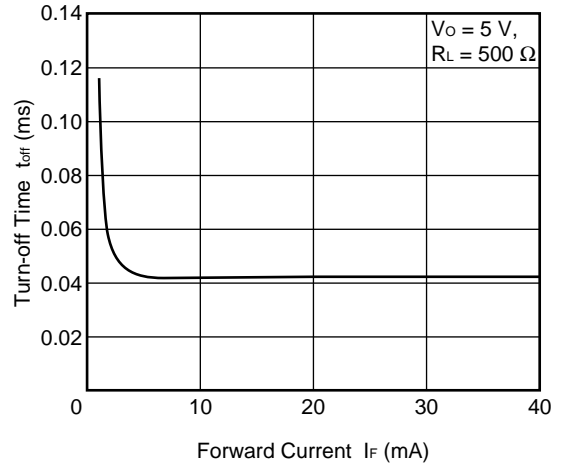
ON-STATE RESISTANCE DISTRIBUTION



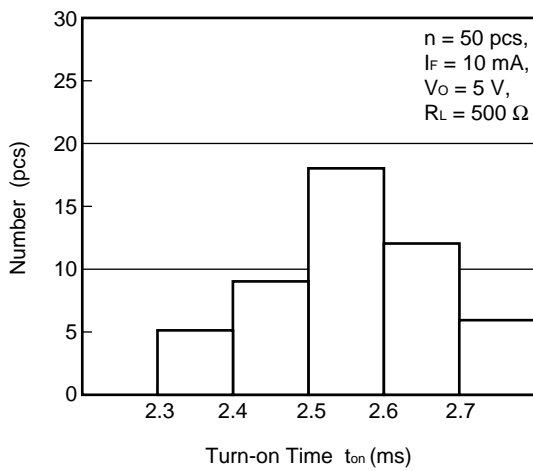
TURN-ON TIME vs. FORWARD CURRENT



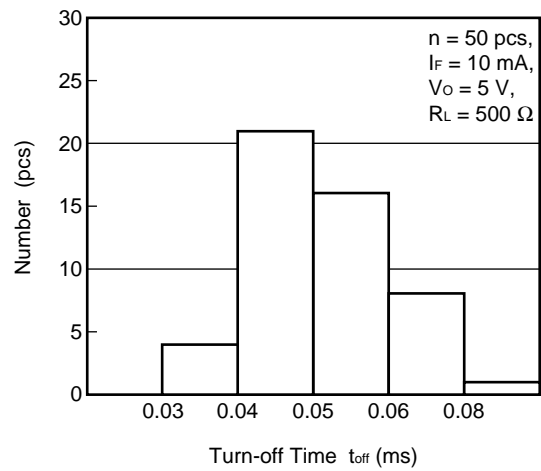
TURN-OFF TIME vs. FORWARD CURRENT



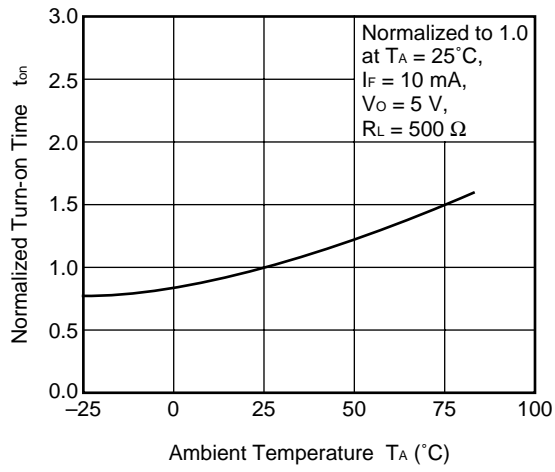
TURN-ON TIME DISTRIBUTION



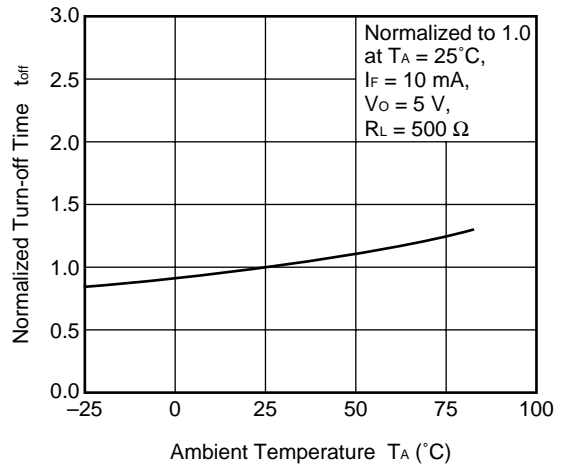
TURN-OFF TIME DISTRIBUTION



NORMALIZED TURN-ON TIME vs. AMBIENT TEMPERATURE



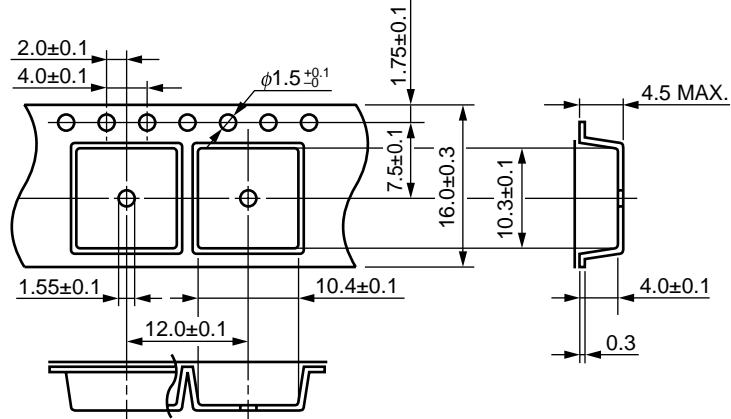
NORMALIZED TURN-OFF TIME vs. AMBIENT TEMPERATURE



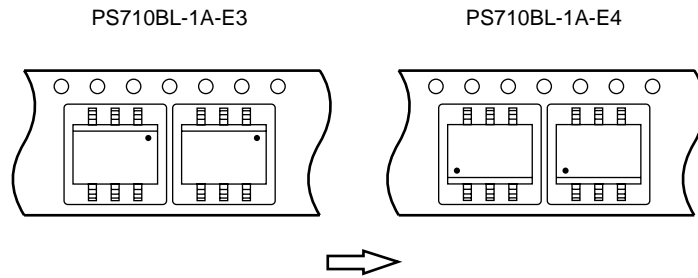
**Remark** The graphs indicate nominal characteristics.

TAPING SPECIFICATIONS (UNIT: mm)

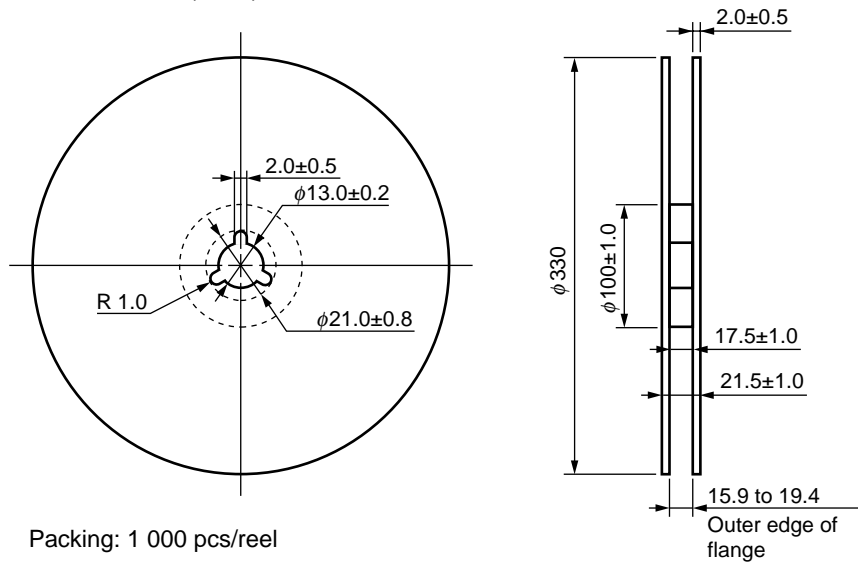
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



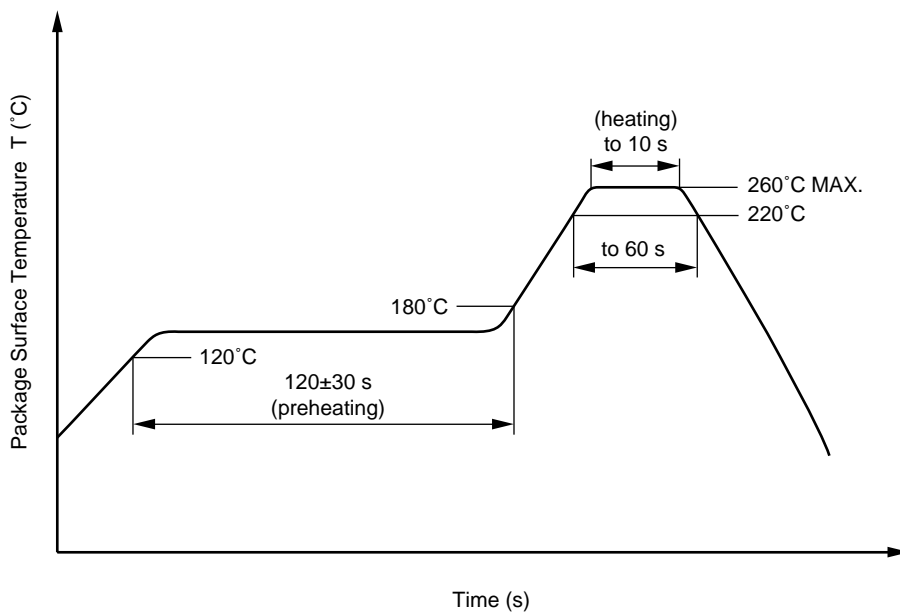
Packing: 1 000 pcs/reel

**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 Three
- 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.)

**(3) Cautions**

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

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M8E 00.4-0110

**SAFETY INFORMATION ON THIS PRODUCT**

<p><b>Caution</b></p>	<p>GaAs Products</p>	<p>The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested.</p> <ul style="list-style-type: none"> <li>• Do not destroy or burn the product.</li> <li>• Do not cut or cleave off any part of the product.</li> <li>• Do not crush or chemically dissolve the product.</li> <li>• Do not put the product in the mouth.</li> </ul> <p>Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.</p>
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