

PS710A-1A, PS710AL-1A

6-PIN DIP, 0.1 Ω LOW ON-STATE RESISTANCE
1.8 A CONTINUOUS LOAD CURRENT
1-ch Optical Coupled MOS FET

DESCRIPTION

The PS710A-1A and PS710AL-1A are solid state relays containing GaAs LEDs on the light emitting side (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 PS710AL-1A has a surface mount type lead.

FEATURES

- Low on-state resistance ($R_{on} = 0.1 \Omega$ TYP.)
- Large continuous load current ($I_L = 1.8 A$)
- 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
- PS710AL-1A: Surface mount type

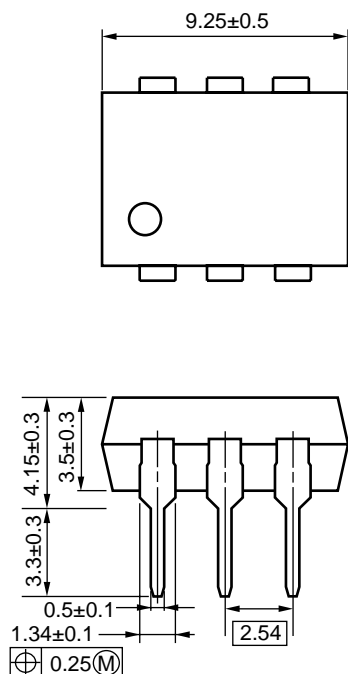
APPLICATIONS

- Measurement equipment
- FA equipment

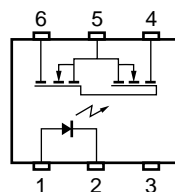
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PACKAGE DIMENSIONS (in millimeters)

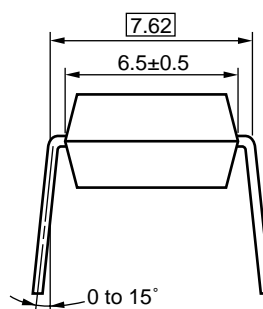
PS710A-1A



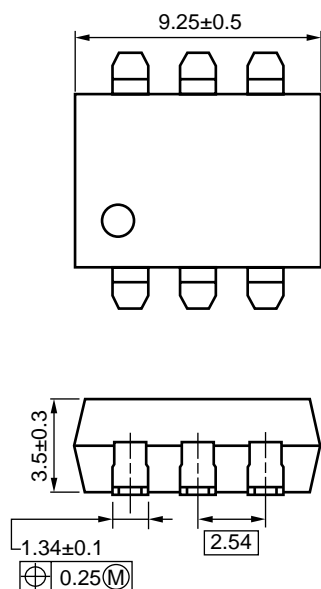
TOP VIEW



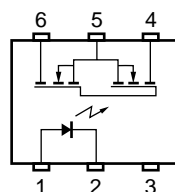
1. LED Anode
2. LED Cathode
3. NC
4. MOS FET Drain
5. MOS FET Source
6. MOS FET Drain



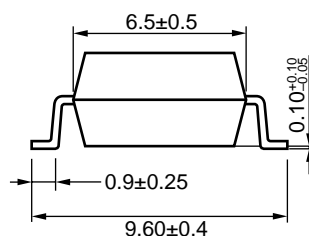
PS710AL-1A



TOP VIEW



1. LED Anode
2. LED Cathode
3. NC
4. MOS FET Drain
5. MOS FET Source
6. MOS FET Drain



ORDERING INFORMATION

Part Number	Package	Packing Style	Application Part Number*1
PS710A-1A	6-pin DIP	Magazine case 50 pcs	PS710A-1A
PS710AL-1A			PS710AL-1A
PS710AL-1A-E3		Embossed Tape 1 000 pcs/reel	
PS710AL-1A-E4			

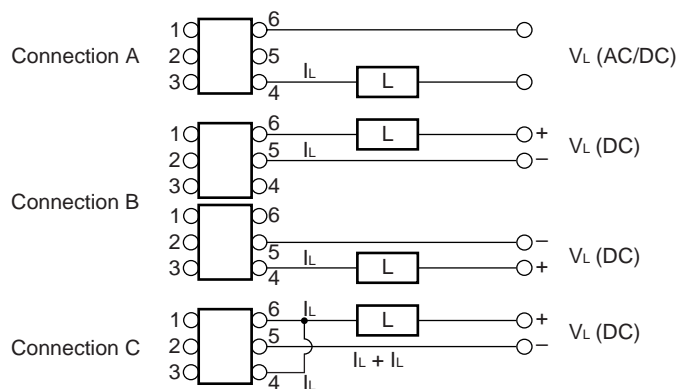
***1** For the application of the Safety Standard, following part number should be used.

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$, 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	60	V
	Continuous Load Current ^{*2}	Connection A	I _L	1.8	A
		Connection B		2.0	
		Connection C		3.6	
	Pulse Load Current ^{*3} (AC/DC Connection)		I _{LP}	3.6	A
	Power Dissipation		P _D	560	mW
Isolation Voltage ^{*4}			BV	1 500	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 +100	°C

*1 $PW = 100\text{ }\mu\text{s}$, Duty Cycle = 1 %

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



*3 $PW = 100\text{ ms}$, 1 shot

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

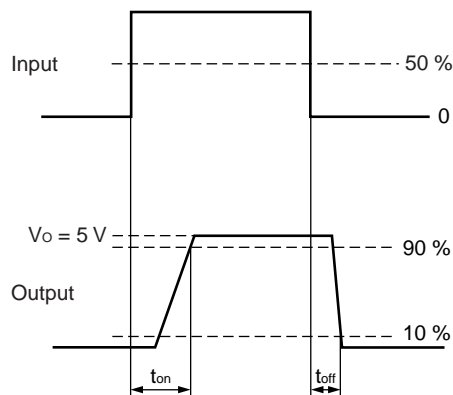
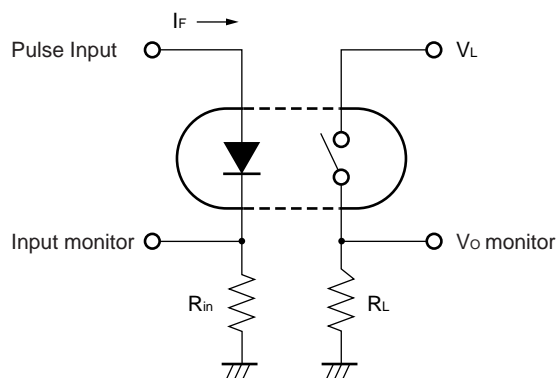
RECOMMENDED OPERATING CONDITIONS ($T_A = 25\text{ }^{\circ}\text{C}$)

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

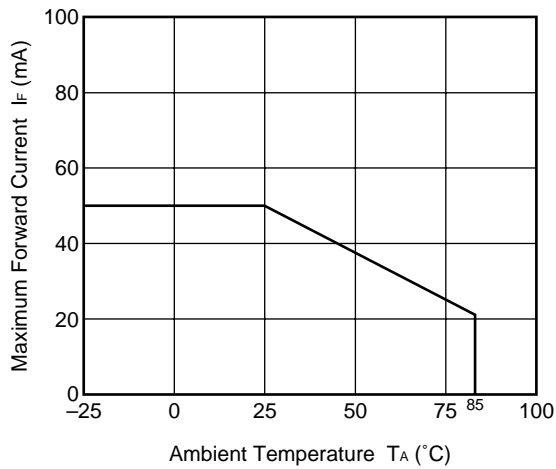
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F	$I_F = 10\text{ mA}$		1.2	1.4	V
	Reverse Current	I_R	$V_R = 5\text{ V}$			5.0	μA
MOS FET	Off-state Leakage Current	I_{Leak}	$V_D = 60\text{ V}$			1.0	μA
	Output Capacitance	C_{out}	$V_D = 0\text{ V}, f = 1\text{ MHz}$		320		pF
Coupled	LED On-state Current	I_{Fon}	$I_L = 1.8\text{ A}$			2.0	mA
	On-state Resistance	R_{on}	$I_F = 10\text{ mA}, I_L = 1.8\text{ A}, t \leq 10\text{ ms}$		0.1	0.2	Ω
	Turn-on Time *1	t_{on}	$I_F = 10\text{ mA}, V_O = 5\text{ V}, R_L = 500\text{ }\Omega,$ $PW \geq 10\text{ ms}$		1.0	3.0	ms
	Turn-off Time *1	t_{off}			0.05	1.0	
	Isolation Resistance	$R_{\text{I-O}}$	$V_{\text{I-O}} = 1.0\text{ kV}_{\text{DC}}$	10^9			Ω
	Isolation Capacitance	$C_{\text{I-O}}$	$V = 0\text{ V}, f = 1\text{ MHz}$		0.5		pF

*1 Test Circuit for Switching Time

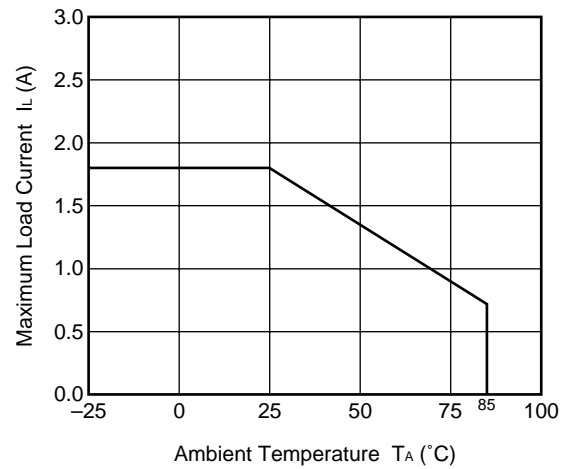


TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

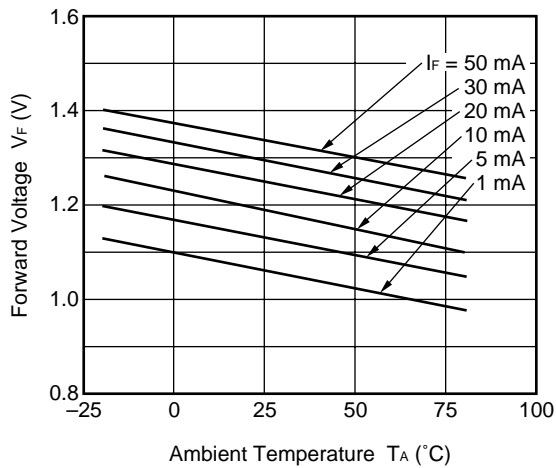
MAXIMUM FORWARD CURRENT vs. AMBIENT TEMPERATURE



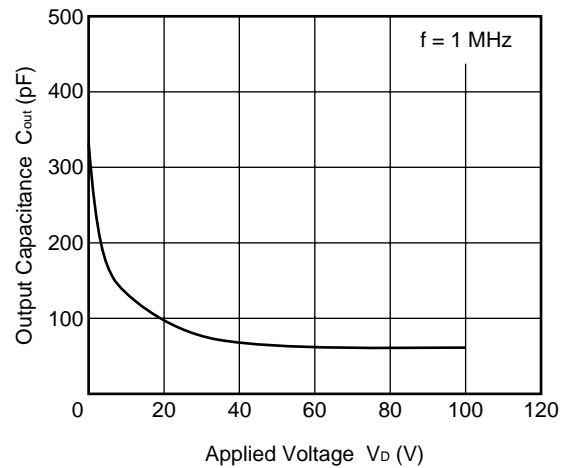
MAXIMUM LOAD CURRENT vs. AMBIENT TEMPERATURE



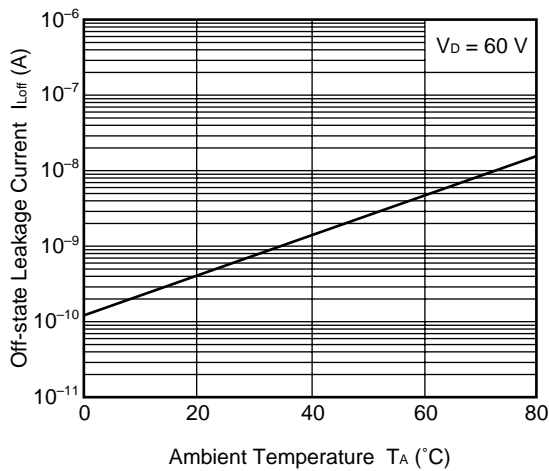
FORWARD VOLTAGE vs. AMBIENT TEMPERATURE



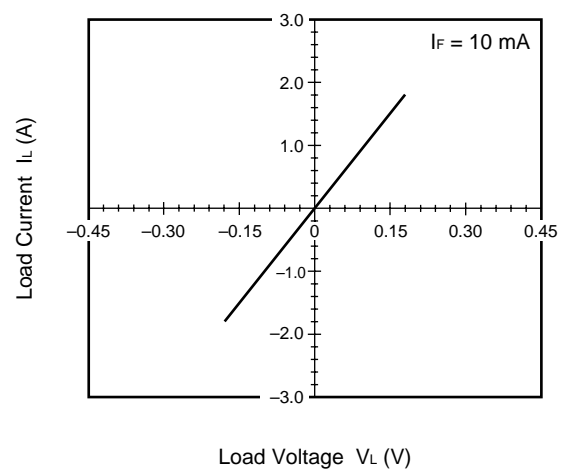
OUTPUT CAPACITANCE vs. APPLIED VOLTAGE



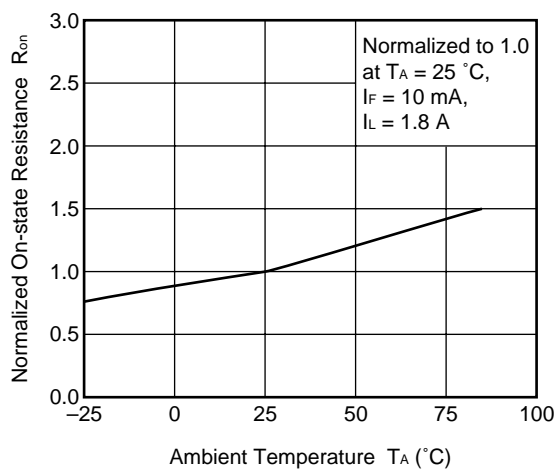
OFF-STATE LEAKAGE CURRENT vs. AMBIENT TEMPERATURE



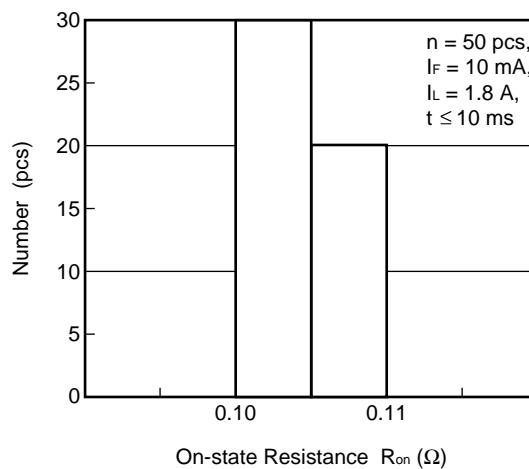
LOAD CURRENT vs. LOAD VOLTAGE



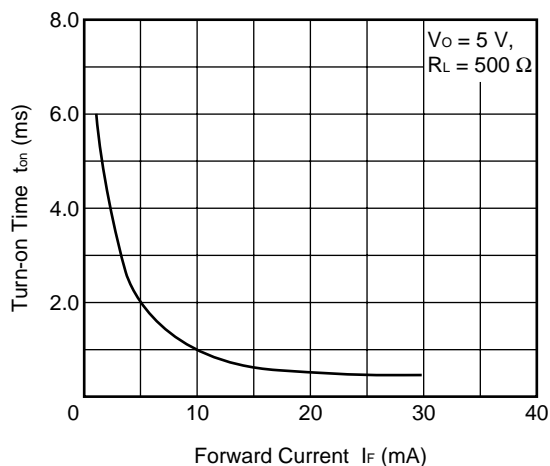
NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



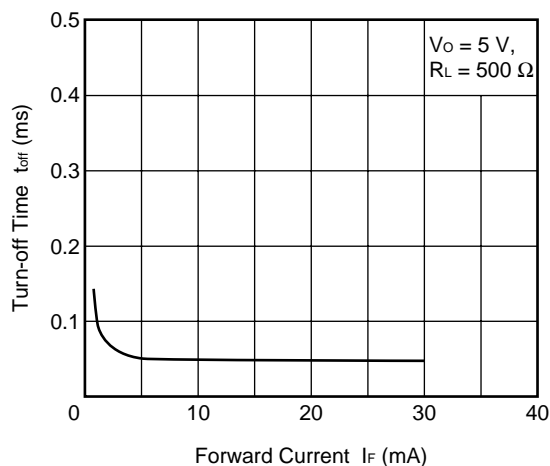
ON-STATE RESISTANCE DISTRIBUTION



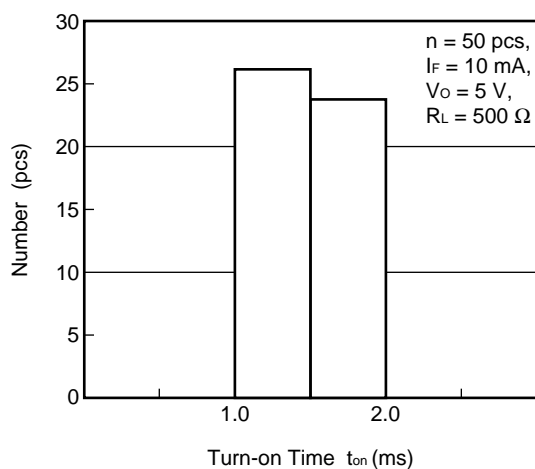
TURN-ON TIME vs. FORWARD CURRENT



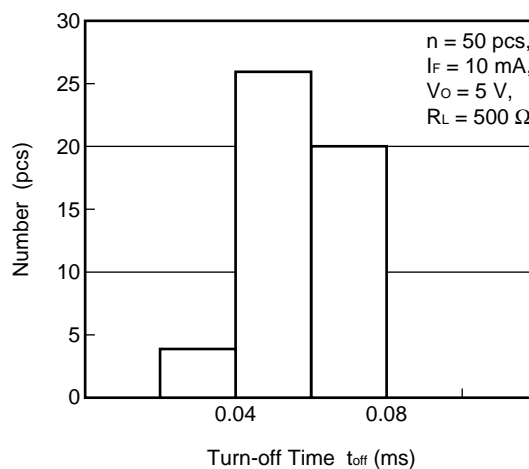
TURN-OFF TIME vs. FORWARD CURRENT

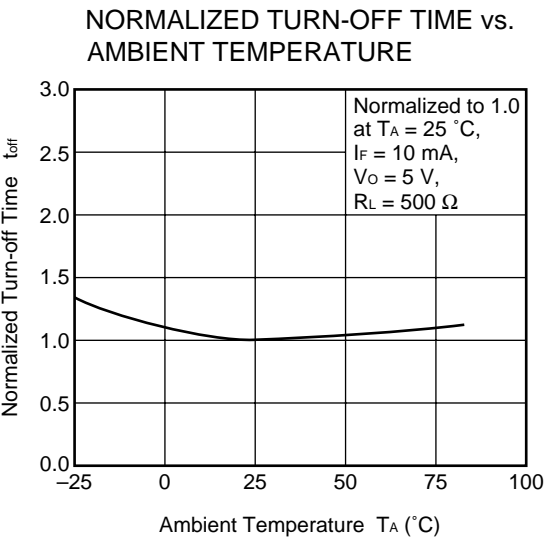
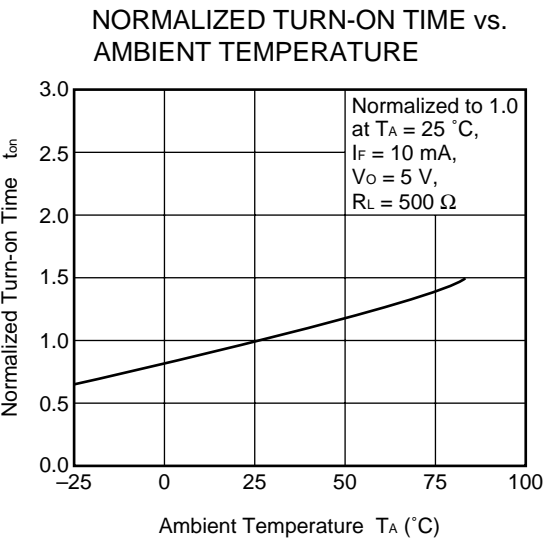


TURN-ON TIME DISTRIBUTION



TURN-OFF TIME DISTRIBUTION

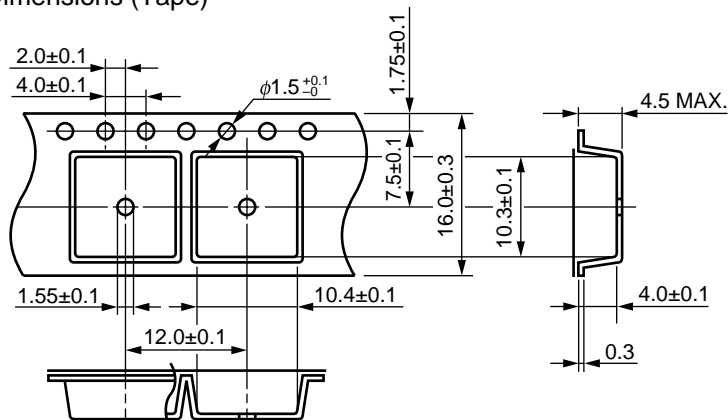




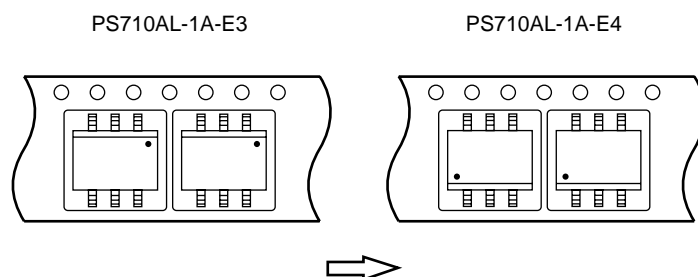
Remark The graphs indicate nominal characteristics.

★ TAPING SPECIFICATIONS (in millimeters)

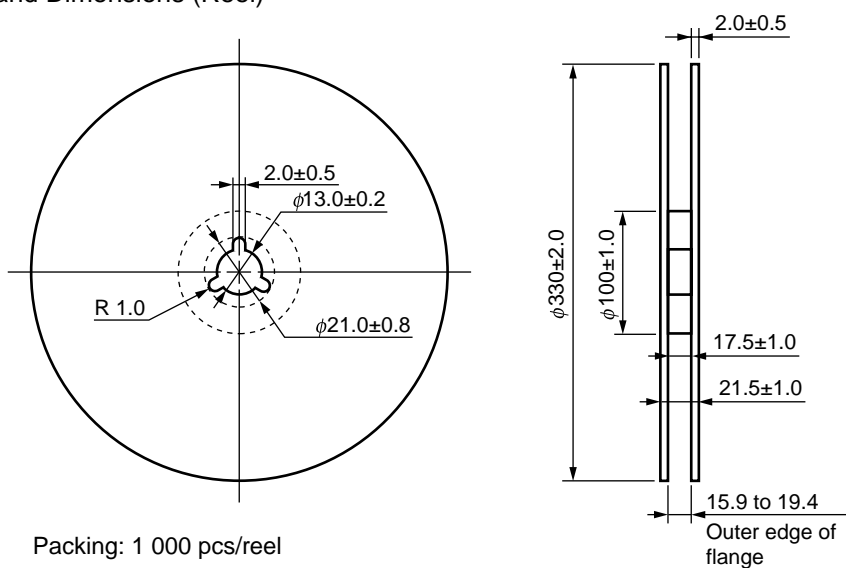
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)

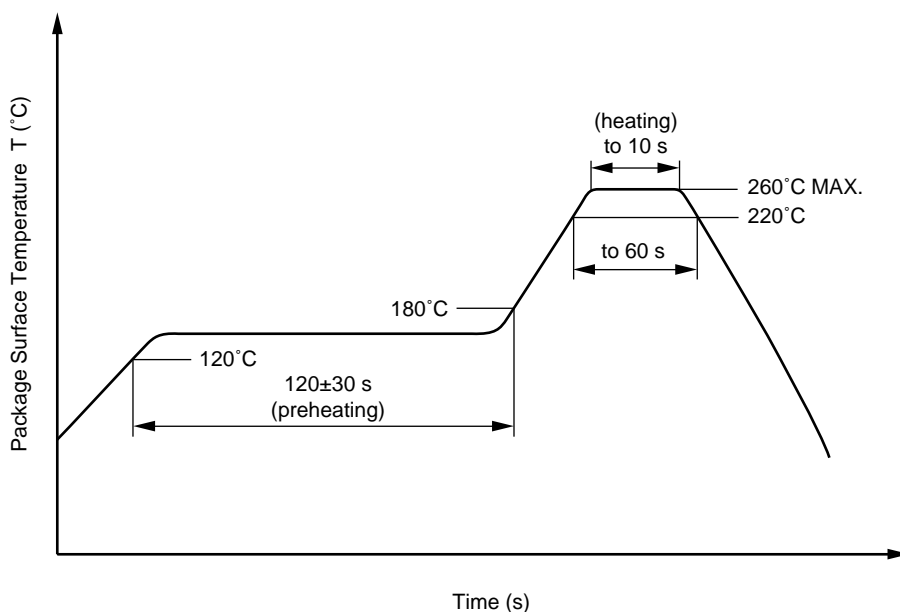


★ RECOMMENDED SOLDERING CONDITIONS

(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

<div data-bbox="177 271 288 311" data-label="Section-Header"> <p>Caution</p> </div> <div data-bbox="300 275 448 302" data-label="Text"> <p>GaAs Products</p> </div>	<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"> • Do not destroy or burn the product. • Do not cut or cleave off any part of the product. • Do not crush or chemically dissolve the product. • Do not put the product in the mouth. <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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► For further information, please contact

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