NEC

Solid State Relay
OCMOS FET

PS710CL2-1A

4-PIN DIP, 0.1 Ω LOW ON-STATE RESISTANCE 2.0 A CONTINUOUS LOAD CURRENT 1-ch Optical Coupled MOS FET

–NEPOC Series–

DESCRIPTION

The PS710CL2-1A is a solid state relay containing a GaAs LED on the 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 PS710CL2-1A has a surface mount type with 10.16 mm lead pitch.

FEATURES

- Low on-state resistance (R_{on} = 0.1 Ω TYP.)
- Large continuous load current (I_L = 2.0 A)
- 1 channel type (1 a output)
- Low LED operating current (I_F = 2 mA)
- Designed for AC/DC switching line changer
- Small package (4-pin DIP)
- Low offset voltage
- Ordering number of taping product: PS710CL2-1A-E3, E4

APPLICATIONS

- Measurement equipment
- FA equipment

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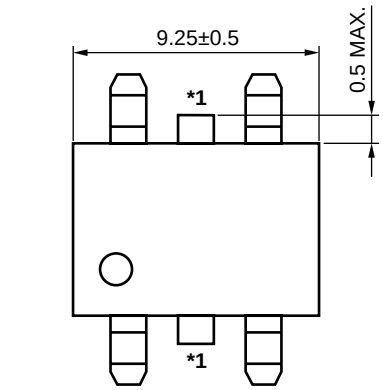
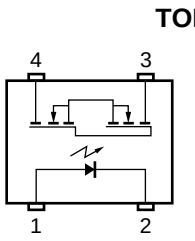
Printed in Japan

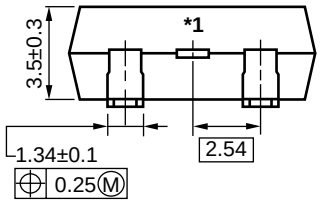
PACKAGE DIMENSIONS (UNIT: mm)

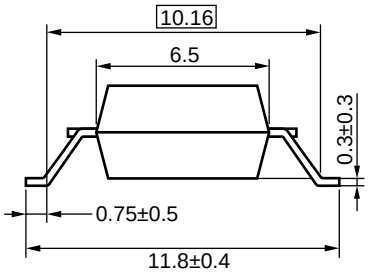
PS710CL2-1A





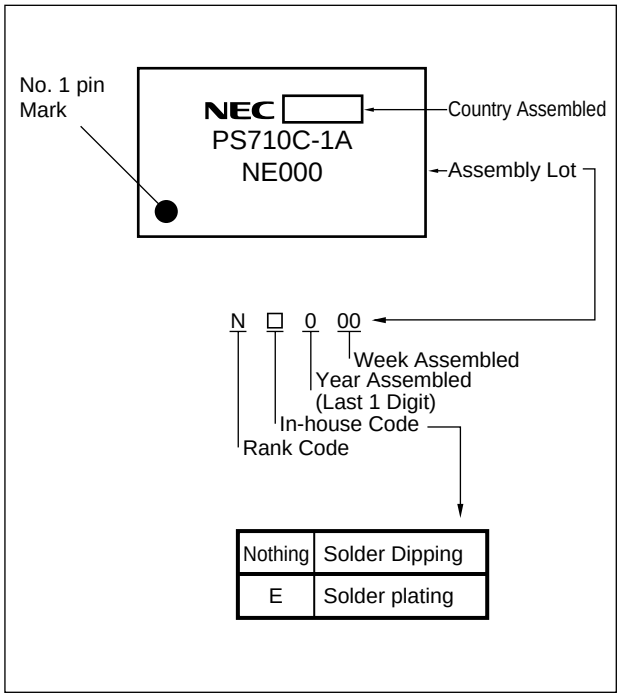
1. LED Anode
2. LED Cathode
3. MOS FET Drain
4. MOS FET Drain





***1** Cut the lead

MARKING EXAMPLE



Nothing	Solder Dipping
E	Solder plating

ORDERING INFORMATION

Part Number	Package	Packing Style	Application Part Number *1
PS710CL2-1A	4-pin DIP	Magazine case 50 pcs	PS710CL2-1A
PS710CL2-1A-E3		Embossed Tape 1 000 pcs/reel	
PS710CL2-1A-E4			

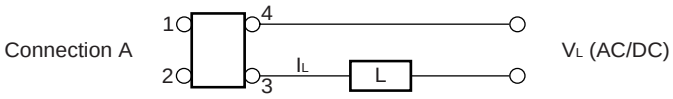
***1** For the application of the Safety Standard, following part number should be used.

ABSOLUTE MAXIMUM RATINGS (T_A = 25°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	Load Voltage		V_L	60	V
	Continuous Load Current *2	Connection A	I_L	2.0	A
	Pulse Load Current *3 (AC/DC Connection)		I_{LP}	4.0	A
	Power Dissipation		P_D	600	mW
Isolation Voltage *4			BV	1 500	Vr.m.s.
Total Power Dissipation			P_T	650	mW
Operating Ambient Temperature			T_A	−40 to +85	°C
Storage Temperature			T_{stg}	−40 to +100	°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°C, RH = 60% between input and output

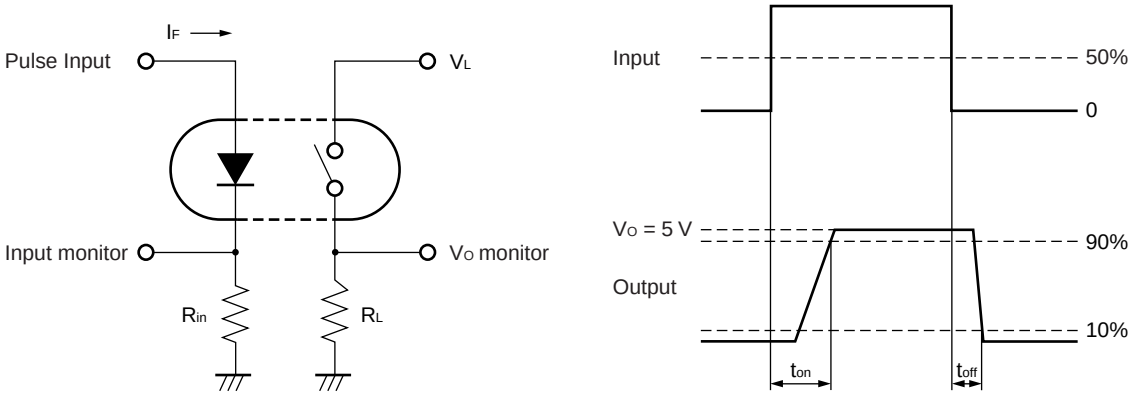
RECOMMENDED OPERATING CONDITIONS (T_A = 25°C)

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°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F	I_F = 10 mA		1.2	1.4	V
	Reverse Current	I_R	V_R = 5 V			5.0	μA
MOS FET	Off-state Leakage Current	I_{Loff}	V_D = 60 V			1.0	μA
	Output Capacitance	C_{out}	V_D = 0 V, f = 1 MHz		320		pF
Coupled	LED On-state Current	I_{Fon}	I_L = 2.0 A			2.0	mA
	On-state Resistance	R_{on}	I_F = 10 mA, I_L = 2.0 A, t ≤ 10 ms		0.1	0.15	Ω
	Turn-on Time *1, 2	t_{on}	I_F = 10 mA, V_O = 5 V, R_L = 500 Ω,		1.0	3.0	ms
	Turn-off Time *1, 2	t_{off}	PW ≥ 10 ms		0.05	1.0	
	Isolation Resistance	R_{I-O}	V_{I-O} = 1.0 kV_{DC}	10^9			Ω
	Isolation Capacitance	C_{I-O}	V = 0 V, f = 1 MHz		0.5		pF

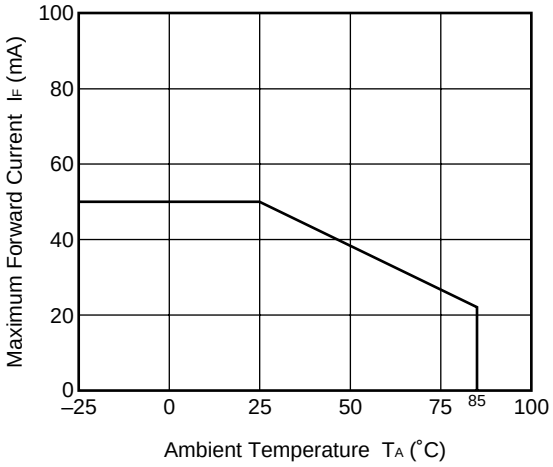
***1** Test Circuit for Switching Time



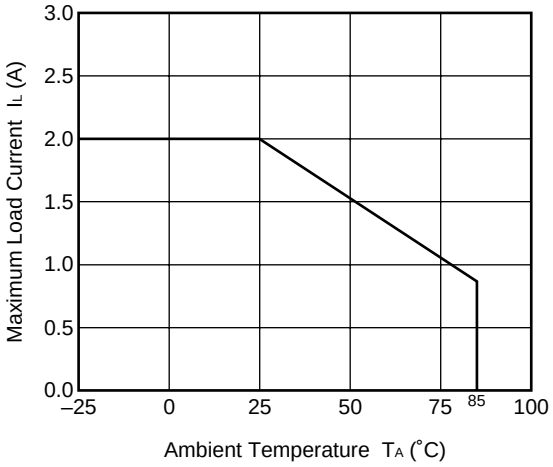
***2** The turn-on time and turn-off time are specified as input-pulse width ≥ 10 ms.
Be aware that when the device operates with an input-pulse width of under 10 ms, the turn-on time and turn-off time will increase.

TYPICAL CHARACTERISTICS (T_A = 25°C, unless otherwise specified)

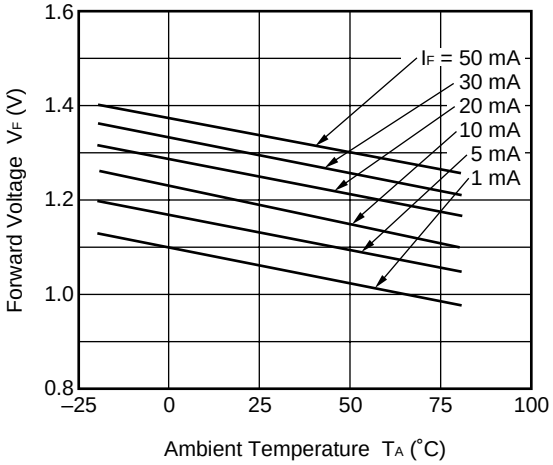
MAXIMUM FORWARD CURRENT vs. AMBIENT TEMPERATURE



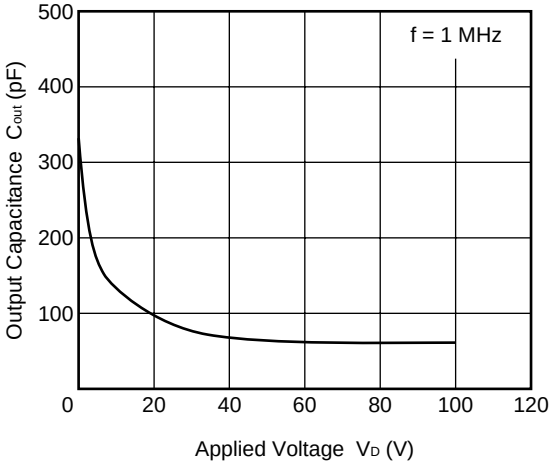
MAXIMUM LOAD CURRENT vs. AMBIENT TEMPERATURE



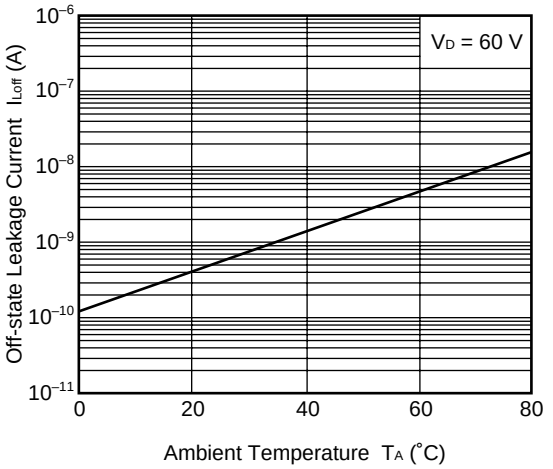
FORWARD VOLTAGE vs. AMBIENT TEMPERATURE



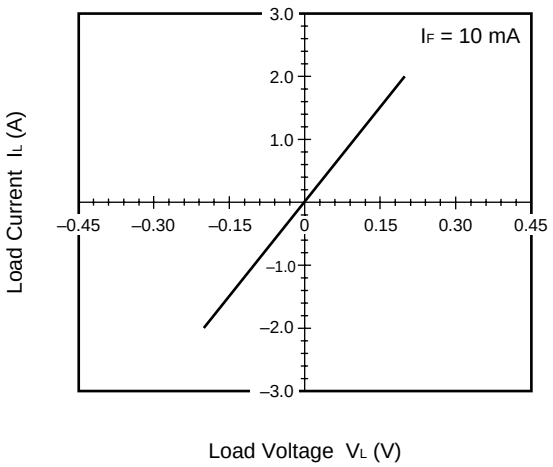
OUTPUT CAPACITANCE vs. APPLIED VOLTAGE



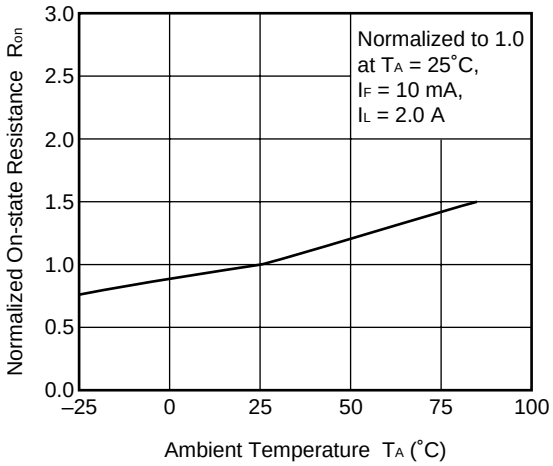
OFF-STATE LEAKAGE CURRENT vs. AMBIENT TEMPERATURE



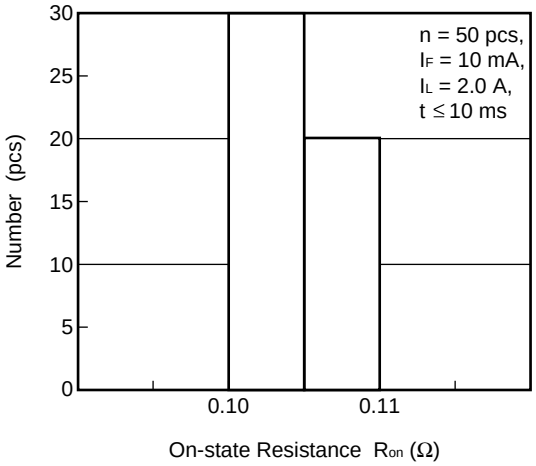
LOAD CURRENT vs. LOAD VOLTAGE



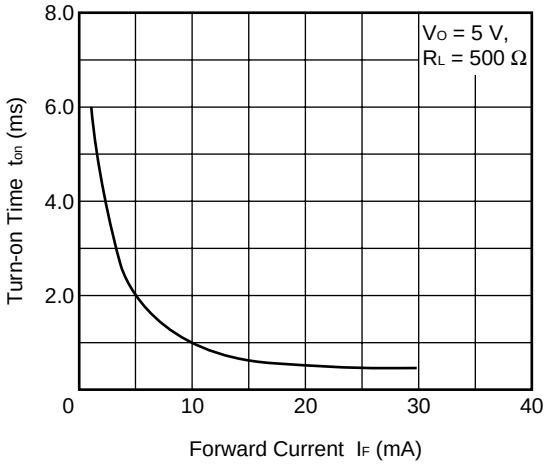
NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



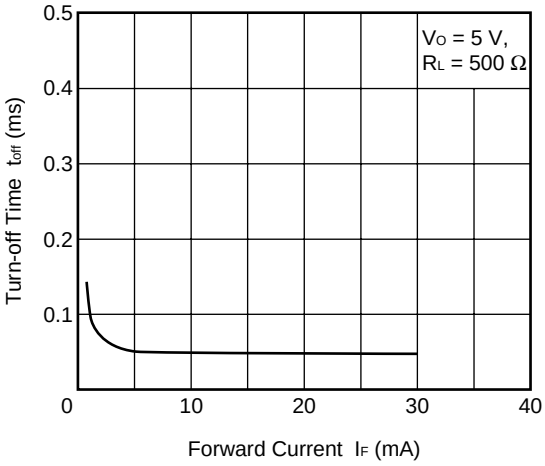
ON-STATE RESISTANCE DISTRIBUTION



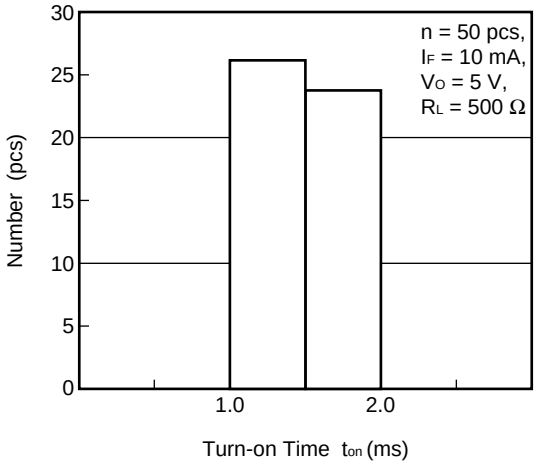
TURN-ON TIME vs. FORWARD CURRENT



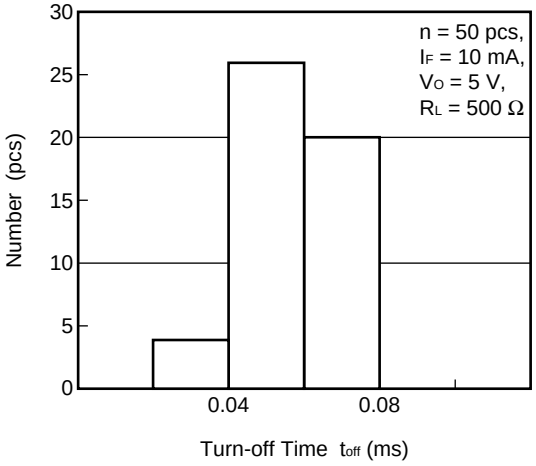
TURN-OFF TIME vs. FORWARD CURRENT



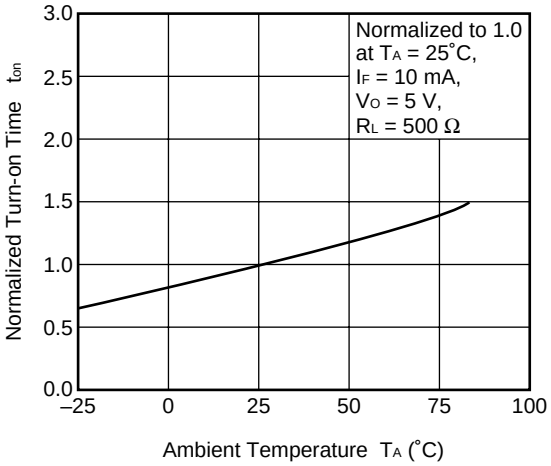
TURN-ON TIME DISTRIBUTION



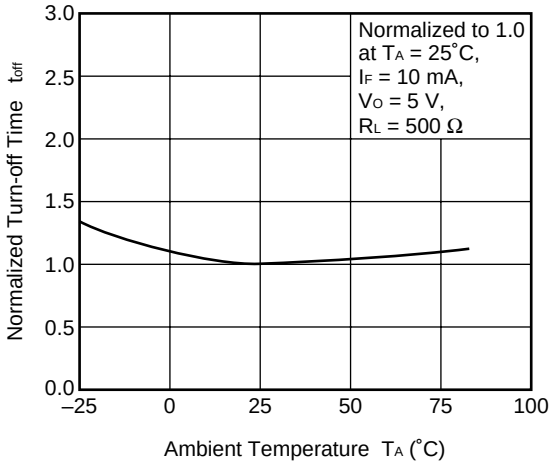
TURN-OFF TIME DISTRIBUTION



NORMALIZED TURN-ON TIME vs. AMBIENT TEMPERATURE



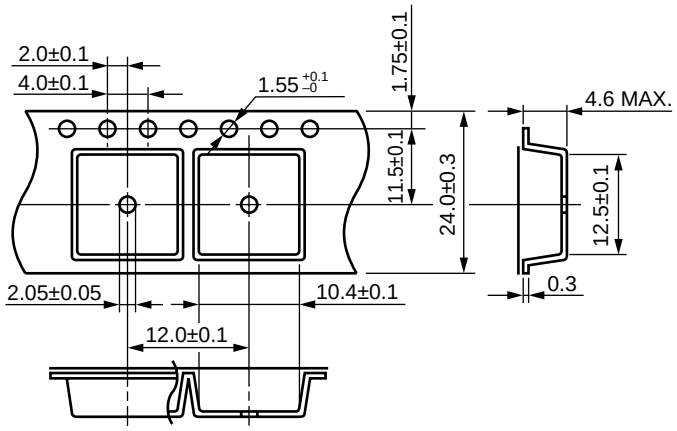
NORMALIZED TURN-OFF TIME vs. AMBIENT TEMPERATURE



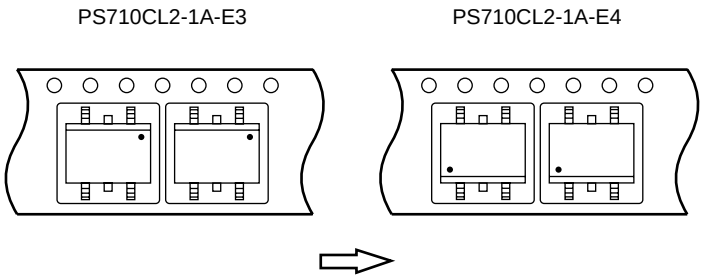
Remark The graphs indicate nominal characteristics.

TAPING SPECIFICATIONS (UNIT: mm)

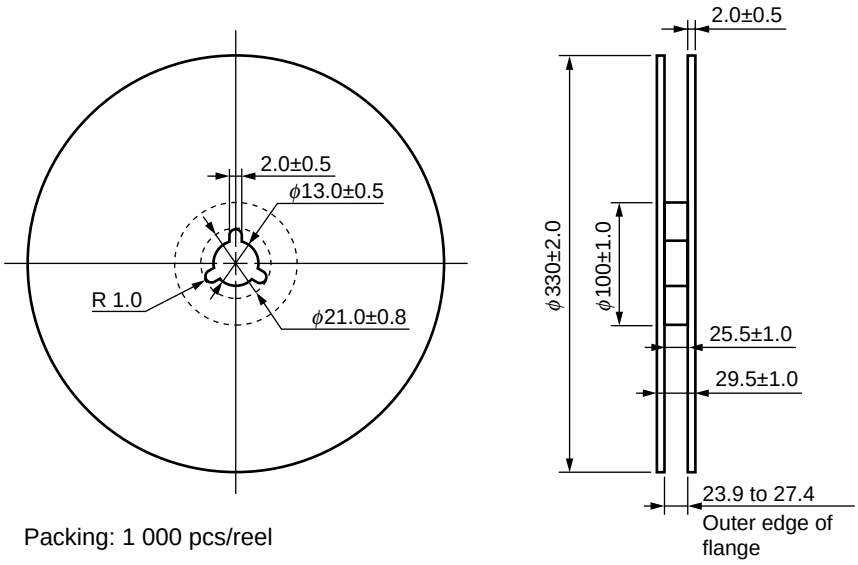
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



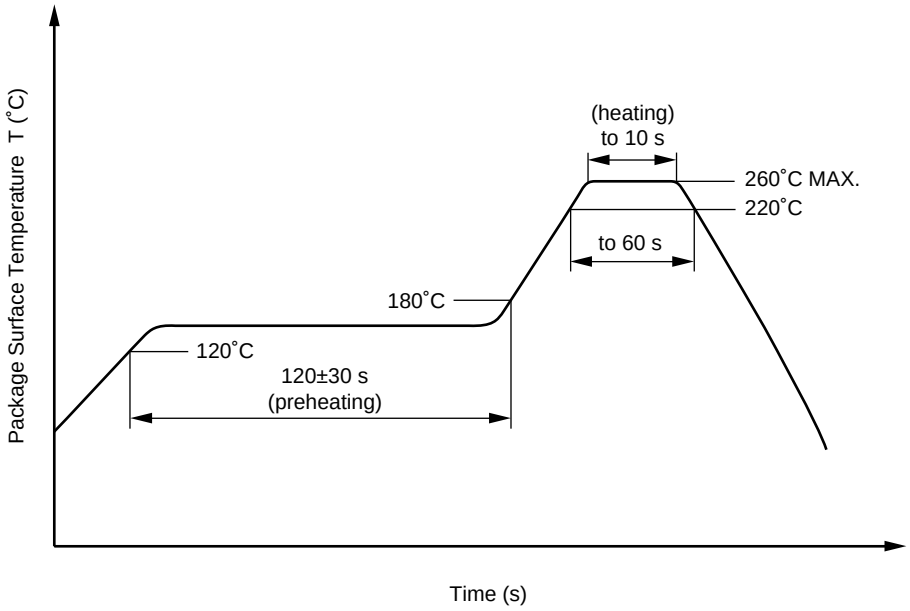
Packing: 1 000 pcs/reel

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

Caution GaAs Products	The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested. • 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. Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.

▶Business issue

NEC Compound Semiconductor Devices, Ltd.
5th Sales Group, Sales Division TEL: +81-3-3798-6372 FAX: +81-3-3798-6783 E-mail: salesinfo@csd-nec.com

NEC Compound Semiconductor Devices Hong Kong Limited
Hong Kong Head Office TEL: +852-3107-7303 FAX: +852-3107-7309
Taipei Branch Office TEL: +886-2-8712-0478 FAX: +886-2-2545-3859
Korea Branch Office TEL: +82-2-528-0301 FAX: +82-2-528-0302

NEC Electron Devices European Operations http://www.nec.de/
TEL: +49-211-6503-101 FAX: +49-211-6503-487

California Eastern Laboratories, Inc. http://www.cel.com/
TEL: +1-408-988-3500 FAX: +1-408-988-0279

▶Technical issue

NEC Compound Semiconductor Devices, Ltd. http://www.csd-nec.com/
Sales Engineering Group, Sales Division
E-mail: techinfo@csd-nec.com FAX: +81-44-435-1918