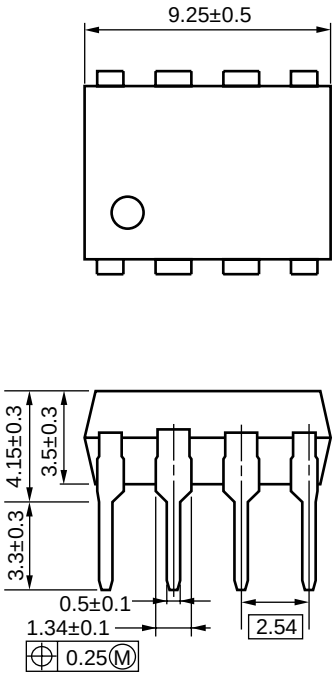
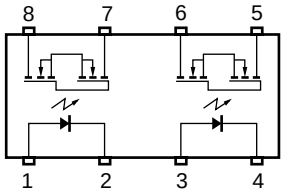
PACKAGE DIMENSIONS (in millimeters)

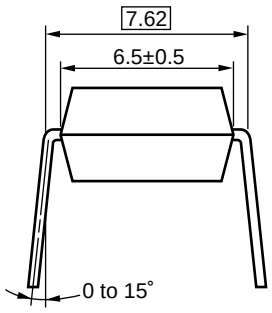
PS7160-2A



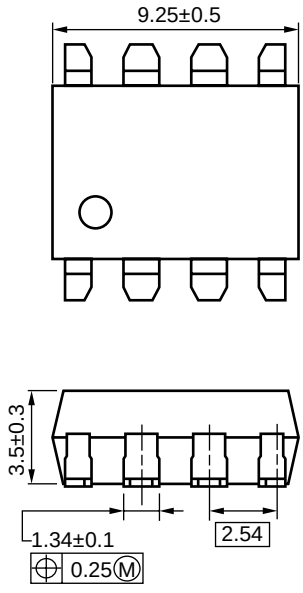
TOP VIEW



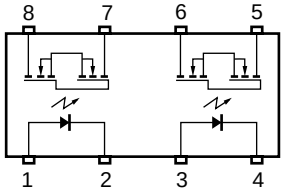
1. LED Anode
2. LED Cathode
3. LED Anode
4. LED Cathode
5. MOS FET
6. MOS FET
7. MOS FET
8. MOS FET



PS7160L-2A



TOP VIEW



1. LED Anode
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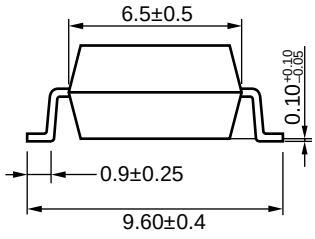
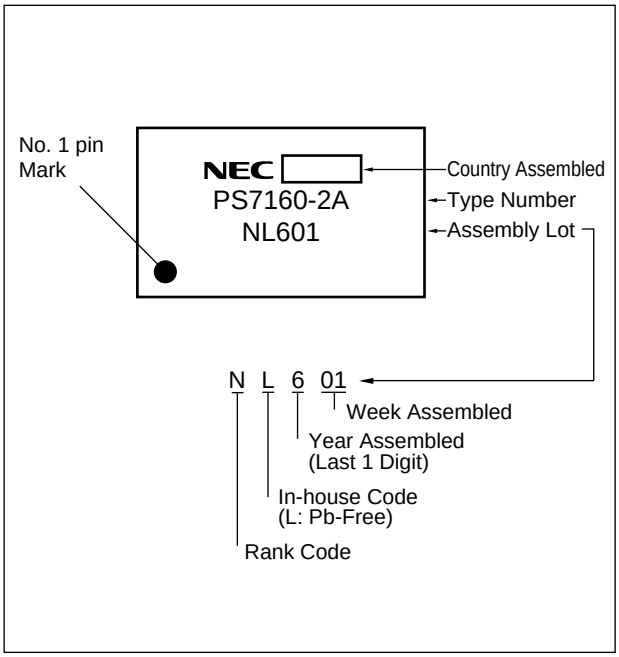


<R> **MARKING EXAMPLE**



<R> **ORDERING INFORMATION**

Part Number	Order Number	Solder Plating Specification	Packing Style	Safety Standard Approval	Application Part Number*1
PS7160-2A	PS7160-2A-A	Pb-Free	Magazine case 50 pcs	Standard products (UL, BSI, CSA approved)	PS7160-2A
PS7160L-2A	PS7160L-2A-A				
PS7160L-2A-E3	PS7160L-2A-E3-A		Embossed Tape 1 000 pcs/reel		
PS7160L-2A-E4	PS7160L-2A-E4-A				

***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/ch
	Reverse Voltage	V_R	5.0	V
	Power Dissipation	P_D	50	mW/ch
	Peak Forward Current *1	I_{FP}	1	A/ch
MOS FET	Break Down Voltage	V_L	600	V
	Continuous Load Current *2	I_L	90 (120)	mA/ch
	Pulse Load Current *2, 3 (AC/DC Connection)	I_{LP}	250 (300)	mA/ch
	Power Dissipation	P_D	375	mW/ch
Isolation Voltage *4		BV	1 500	Vr.m.s.
Total Power Dissipation		P_T	850	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: $I_F \geq 5$ mA. Load current ( ) value is.

***3** PW = 100 ms, 1 shot

***4** AC voltage for 1 minute at T_A = 25°C, RH = 60% between input and output Pins 1-4 shorted together, 5-8 shorted together.

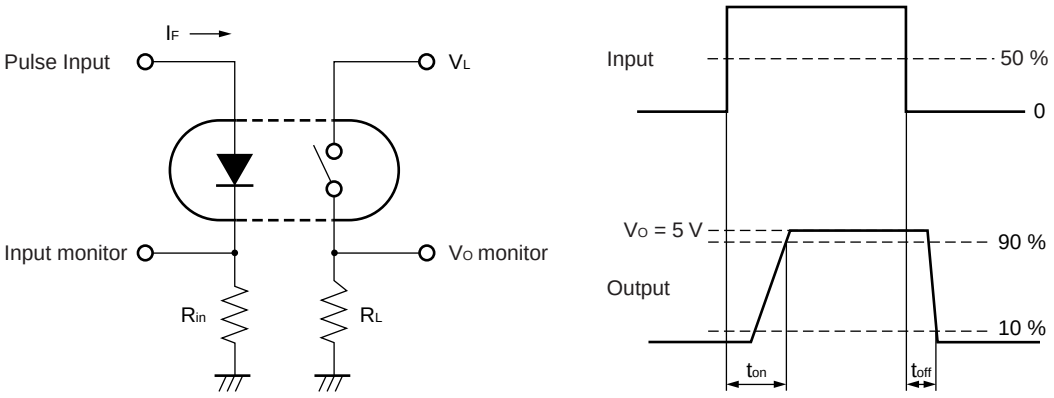
RECOMMENDED OPERATING CONDITIONS (T_A = 25°C)

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 = 600 V		0.03	1.0	μA
	Output Capacitance	C_{out}	V_D = 0 V, f = 1 MHz		110		pF/ch
Coupled	LED On-state Current	I_{Fon}	I_L = 90 mA			2.0	mA
	On-state Resistance	R_{on1}	I_F = 10 mA, I_L = 10 mA		42	50	Ω
		R_{on2}	I_F = 10 mA, I_L = 90 mA, t ≤ 10 ms		33	50	
	Turn-on Time *1, 2	t_{on}	I_F = 10 mA, V_O = 5 V, R_L = 500 Ω, PW ≥ 10 ms		0.8	1.5	ms
	Turn-off Time *1, 2	t_{off}			0.06	0.2	
	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		1.1		pF/ch

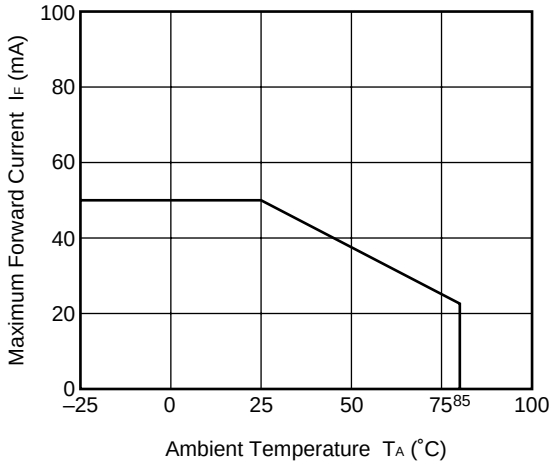
***1** Test Circuit for Switching Time



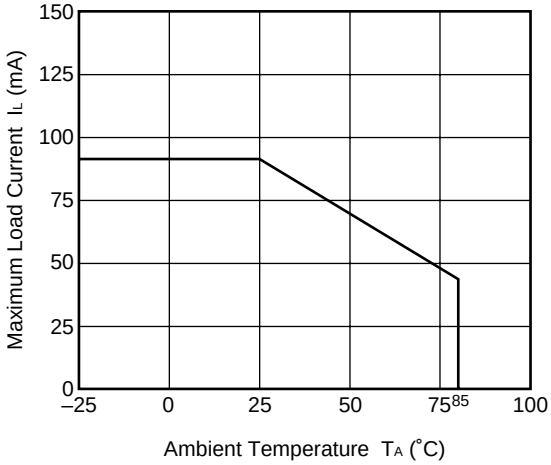
<R> ***2** The turn-on time and turn-off time are specified as input-pulse width ≥ 10 ms.
Be aware that when the device operates with an input-pulse width less than 10 ms, the turn-on time and turn-off time will increase.

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

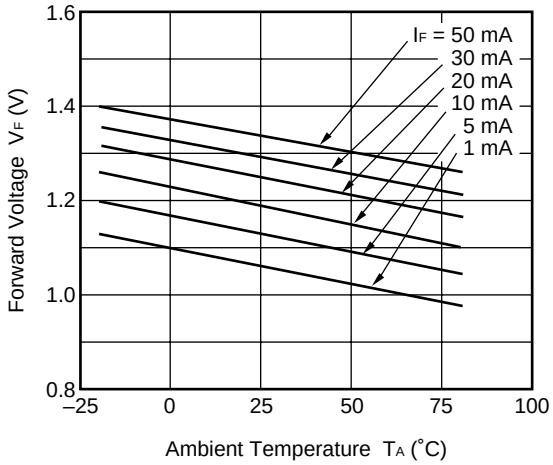
MAXIMUM FORWARD CURRENT vs. AMBIENT TEMPERATURE



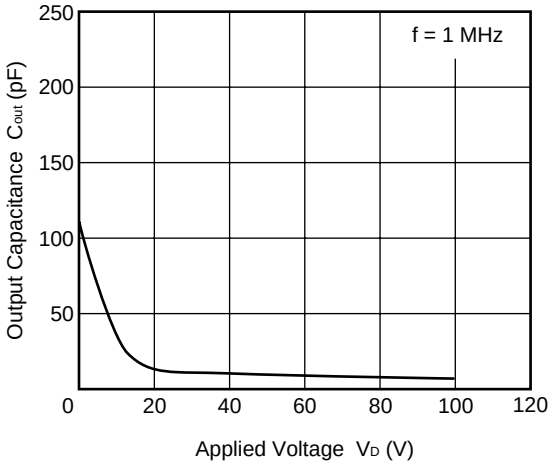
MAXIMUM LOAD CURRENT vs. AMBIENT TEMPERATURE



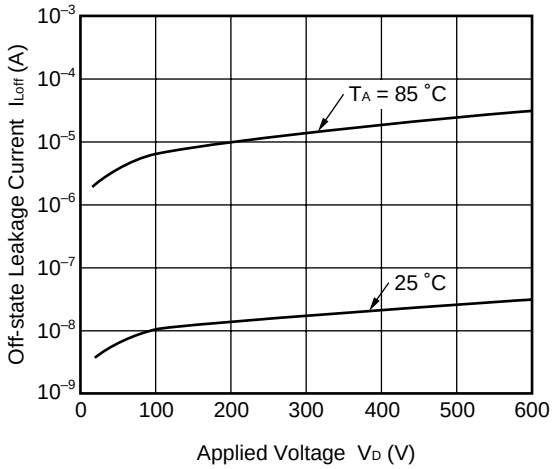
FORWARD VOLTAGE vs. AMBIENT TEMPERATURE



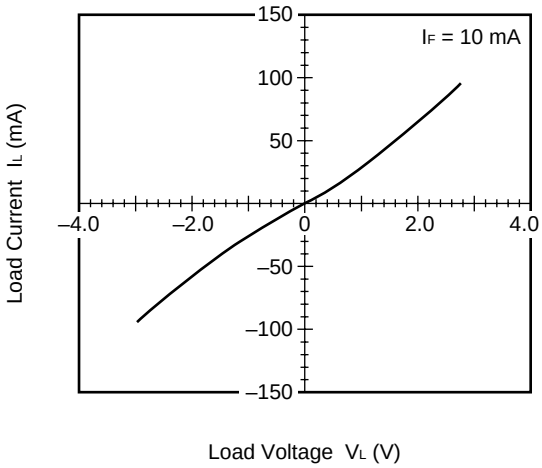
OUTPUT CAPACITANCE vs. APPLIED VOLTAGE



OFF-STATE LEAKAGE CURRENT vs. APPLIED VOLTAGE

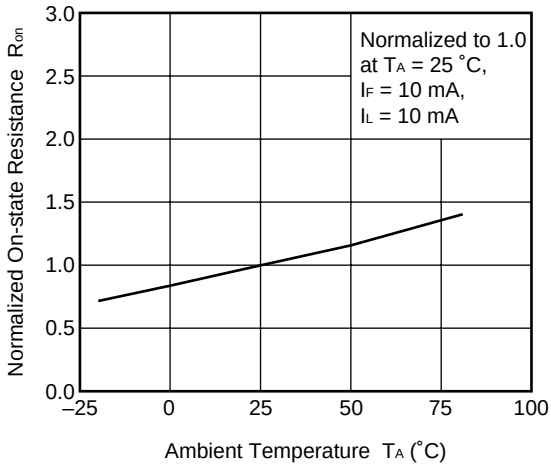


LOAD CURRENT vs. LOAD VOLTAGE

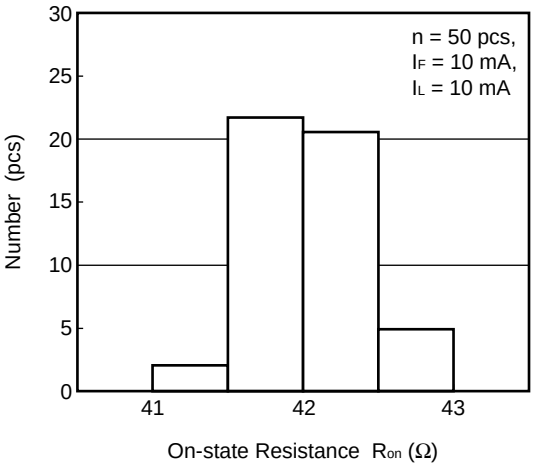


Remark The graphs indicate nominal characteristics.

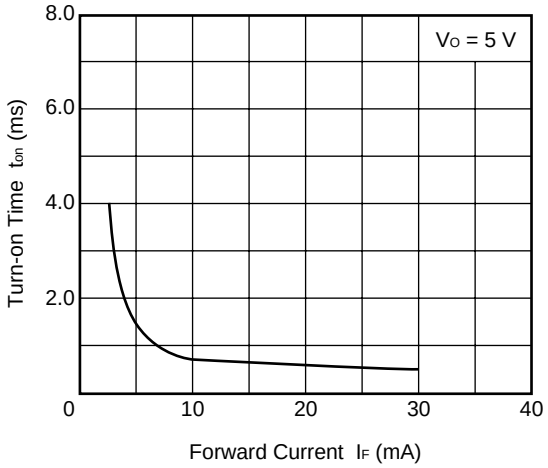
NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



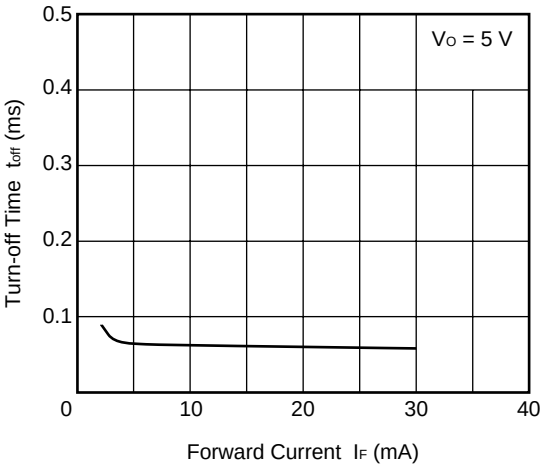
ON-STATE RESISTANCE DISTRIBTION



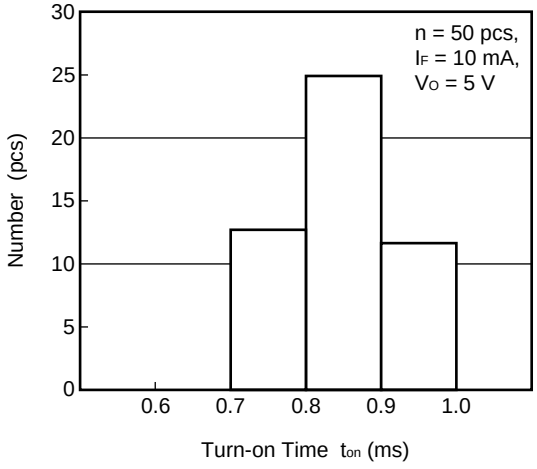
TURN-ON TIME vs. FORWARD CURRENT



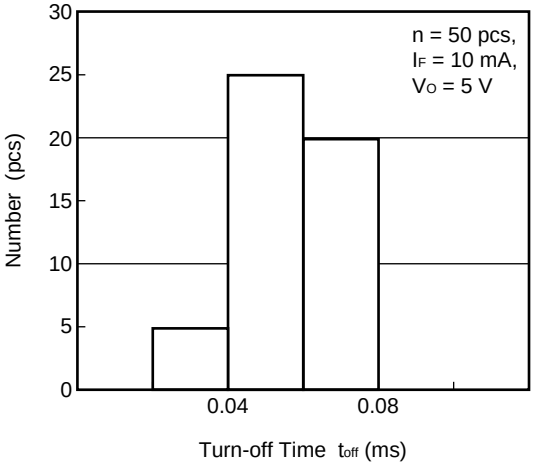
TURN-OFF TIME vs. FORWARD CURRENT



TURN-ON TIME DISTRIBUTION

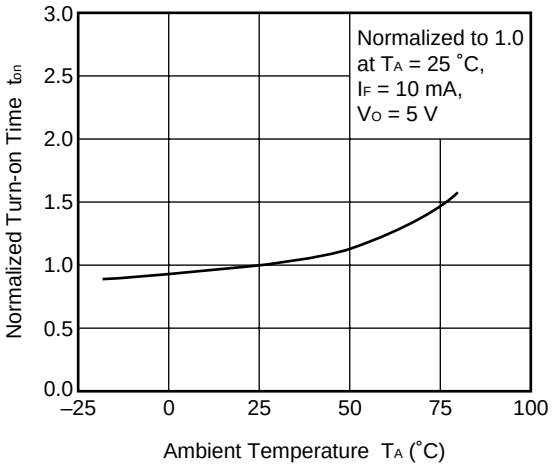


TURN-OFF TIME DISTRIBUTION

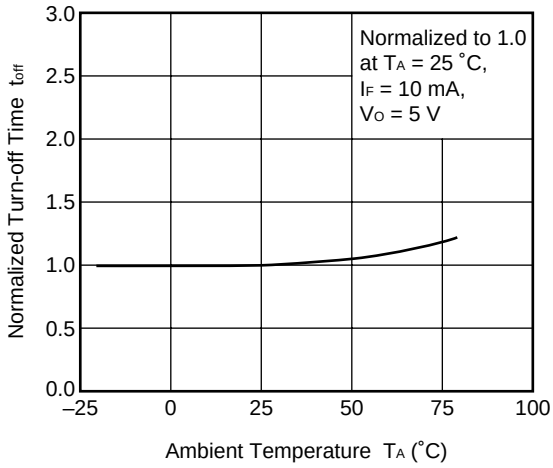


Remark The graphs indicate nominal characteristics.

NORMALIZED TURN-ON TIME vs.
AMBIENT TEMPERATURE



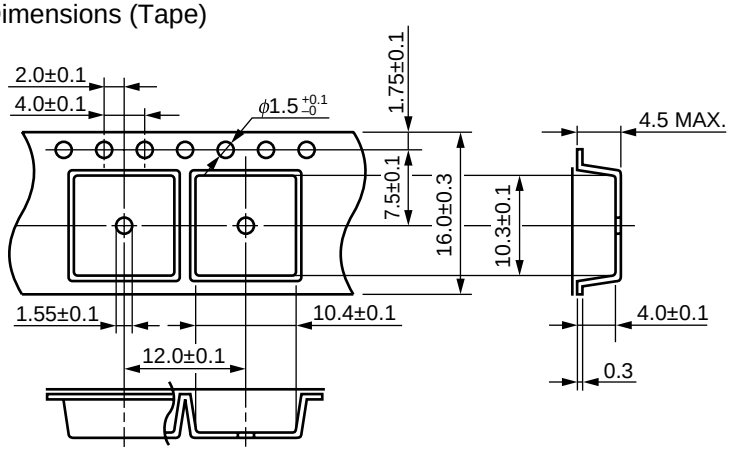
NORMALIZED TURN-OFF TIME vs.
AMBIENT TEMPERATURE



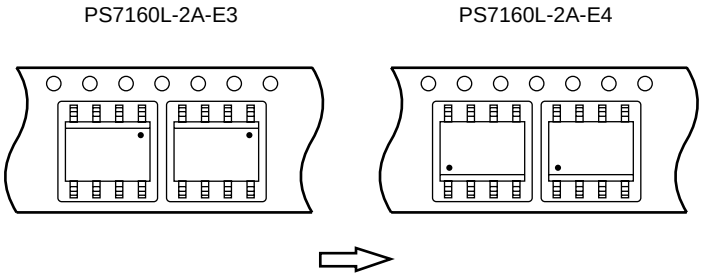
Remark The graphs indicate nominal characteristics.

TAPING SPECIFICATIONS (in millimeters)

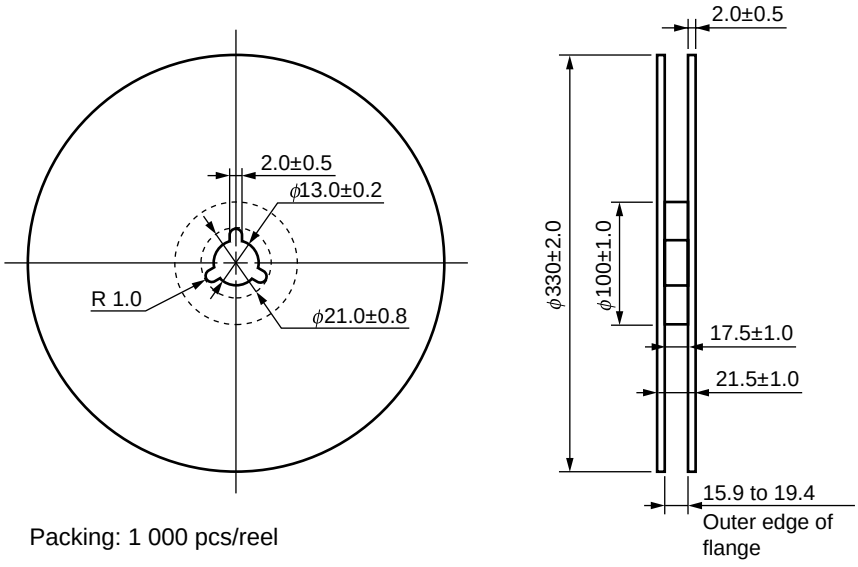
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



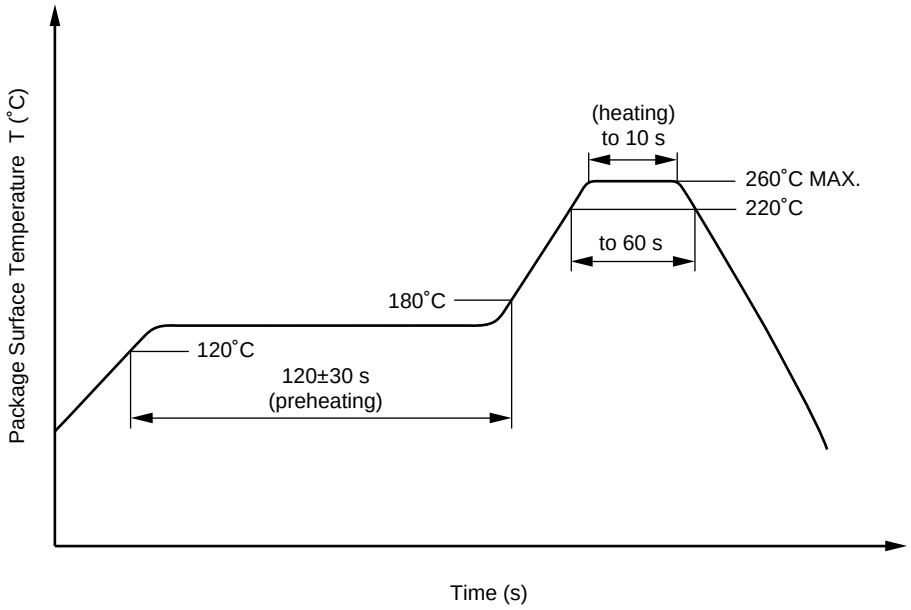
Packing: 1 000 pcs/reel

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.)

<R> **(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

• 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.

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M8E 02. 11-1

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▶**For further information, please contact**

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