



HIGH ISOLATION VOLTAGE SINGLE TRANSISTOR TYPE MULTI PHOTOCOUPLER SERIES

PS2561A-1
PS2561AL-1
PS2561AL1-1
PS2561AL2-1

FEATURES

- **HIGH ISOLATION VOLTAGE:**
(BV = 5 000 Vr.m.s.)
- **ORDERING NUMBER OF TAPING PRODUCT:**
PS2561AL-1-E3, E4, F3, F4, PS2561AL2-1-E3, E4,
PS2561AL-1-1-E3,E4
- **UL, BSI, CSA, NEMKO, DEMKO, SEMKO, FIMKO,
APPROVED**
- **VDE0884 APPROVED (OPTION)**

DESCRIPTION

NEC's PS2561A-1 is an optically coupled isolator containing a GaAs light emitting diode and an NPN silicon phototransistor.

The PS2561A-1 is in a plastic DIP (Dual In-line Package) and the PS2561AL-1 is lead bending type (Gull-wing) for surface mount.

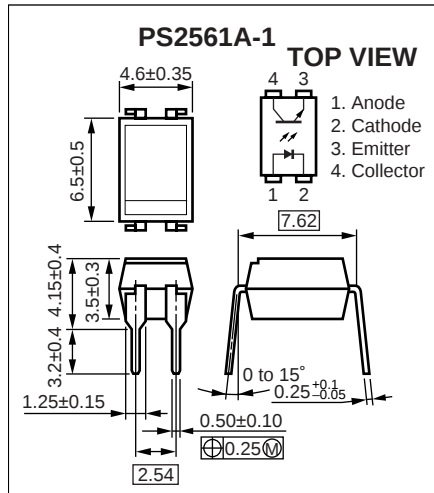
The PS2561AL1-1 is lead bending L1 type for wide creepage through hole mounting and the PS2561AL2-1 is lead bending L2 type for wide creepage surface mount. (Gull-wing).

APPLICATIONS

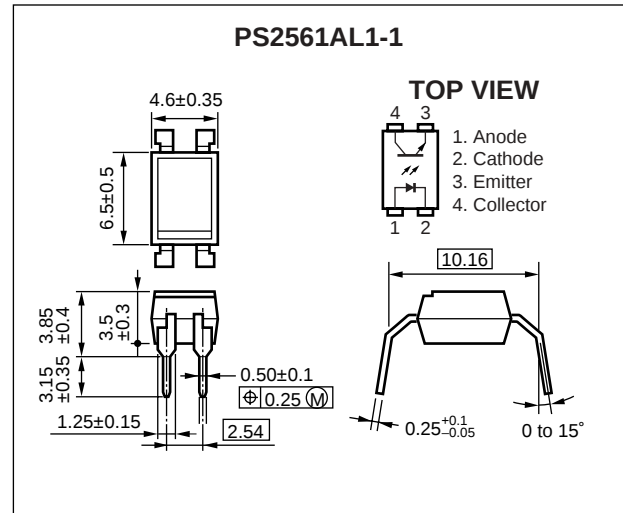
- **Power supply**
- **Telephone/FAX.**
- **FA/OA equipment**
- **Programmable logic controller**

PACKAGE DIMENSIONS (UNIT : mm)

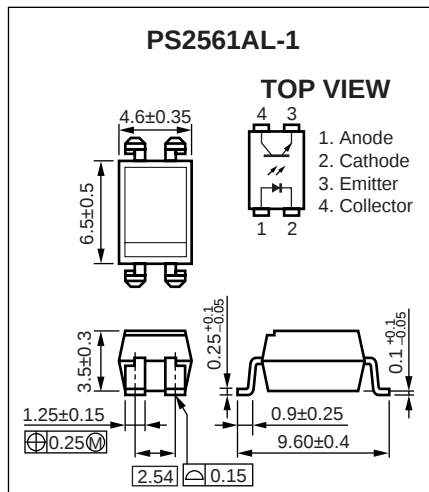
DIP Type



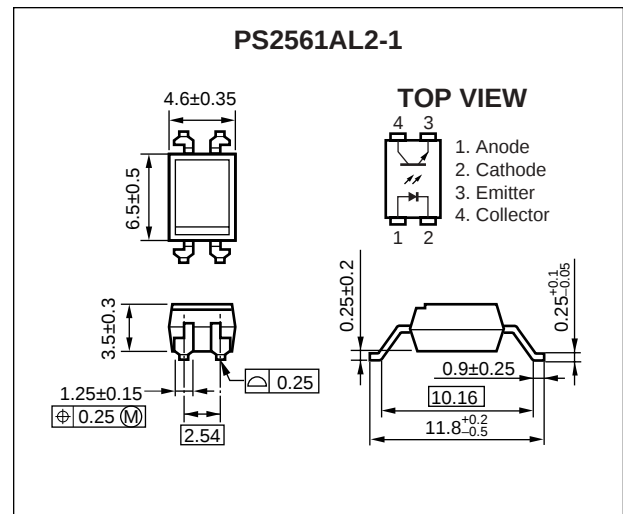
Long Creepage Distance Lead Bend for Through Hole Mount



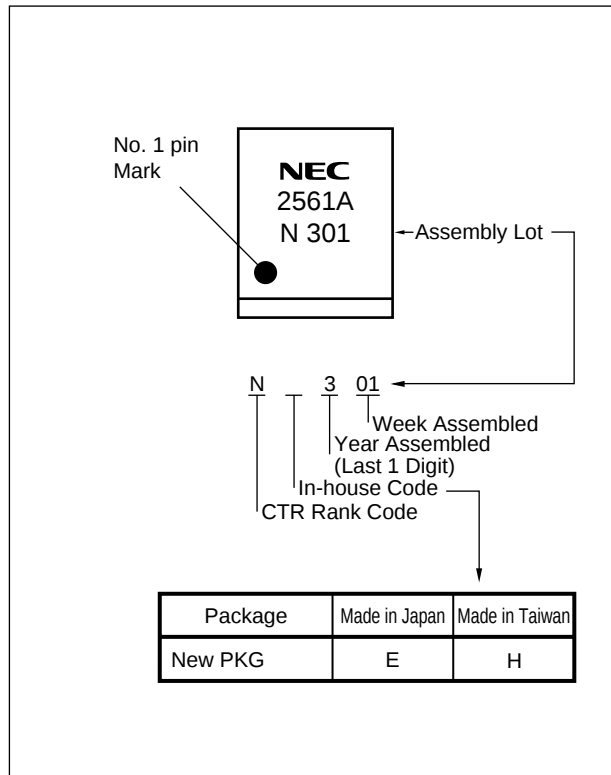
Lead Bending Type for Surface Mount



Long Creepage Distance (Gull-Wing) Lead Bend for Surface Mount



MARKING EXAMPLE



ORDERING INFORMATION

Part Number	Package	Packing Style	Safety Standard Approval	Appliction Part Number ^{*1}
PS2561A-1	4-pin DIP	Magazine case 100 pcs	Standard products (UL, CSA, BSI, NEMKO, SEMKO, DEMKO, FIMKO approved)	PS2561A-1
PS2561AL-1				
PS2561AL1-1				
PS2561AL2-1				
PS2561AL-1-E3		Embossed Tape 1 000 pcs/reel		
PS2561AL-1-E4		Embossed Tape 1 000 pcs/reel		
PS2561AL2-1-E3				
PS2561AL2-1-E4		Embossed Tape 2 000 pcs/reel		
PS2561AL-1-F3				
PS2561AL-1-F4				
PS2561A-1-V		Magazine case 100 pcs	VDE0884 approved products (option)	
PS2561AL-1-V				
PS2561AL1-1-V				
PS2561AL2-1-V				
PS2561AL-1-V-E3		Embossed Tape 1 000 pcs/reel		
PS2561AL-1-V-E4		Embossed Tape 1 000 pcs/reel		
PS2561AL2-1-V-E3				
PS2561AL2-1-V-E4		Embossed Tape 2 000 pcs/reel		
PS2561AL-1-V-F3				
PS2561AL-1-V-F4				

***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	Reverse Voltage	V _R	6	V
	Forward Current (DC)	I _F	30	mA
	Power Dissipation Derating	□P _D /°C	1.5	mW/°C
	Power Dissipation	P _D	150	mW
	Peak Forward Current* ¹	I _{FP}	0.5	A
Transistor	Collector to Emitter Voltage	V _{CEO}	70	V
	Emitter to Collector Voltage	V _{ECO}	5	V
	Collector Current	I _C	30	mA
	Power Dissipation Delay	□P _C /°C	1.5	mW/°C
	Power Dissipation	P _C	150	mW
Isolation Voltage* ²		BV	5 000	Vr.m.s.
Operating Ambient Temperature		T _A	-55 to +100	°C
Storage Temperature		T _{stg}	-55 to +150	°C

*¹ PW = 100 □s, Duty Cycle = 1%

*² AC voltage for 1 minute at T_A = 25°C, RH = 60% between input and output

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	μA
	Terminal Capacitance	C _t	V = 0 V, f = 1.0 MHz		10		pF
Transistor	Collector to Emitter Dark Current	I _{CEO}	V _{CE} = 70 V, I _F = 0 mA			100	nA
Coupled	Current Transfer Ratio (I _C /I _F) ^{*1}	CTR	I _F = 5 mA, V _{CE} = 5 V	50		300	%
	Collector Saturation Voltage	V _{CE(sat)}	I _F = 10 mA, I _C = 2 mA		0.13	0.3	V
	Isolation Resistance	R _{I-O}	V _{I-O} = 1.0 kV _{DC}	10 ¹¹			Ω
	Isolation Capacitance	C _{I-O}	V = 0 V, f = 1.0 MHz		0.4		pF
	Rise Time ^{*2}	t _r	V _{CC} = 10 V, I _C = 2 mA, R _L = 100 Ω		5		μs
	Fall Time ^{*2}	t _f			7		

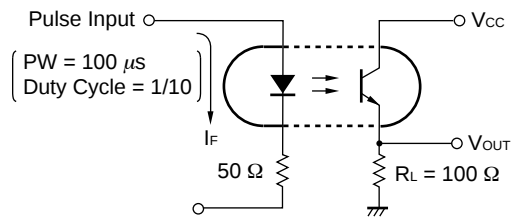
***1** CTR rank

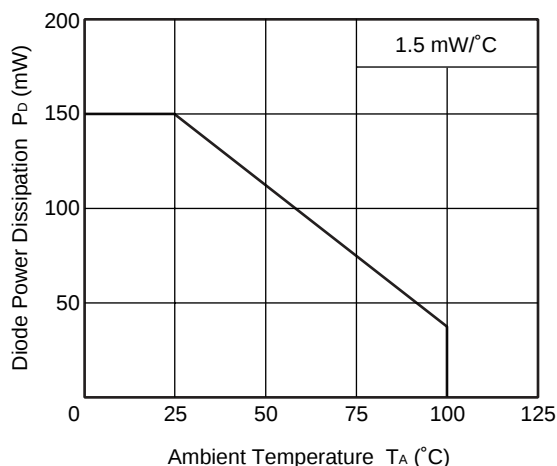
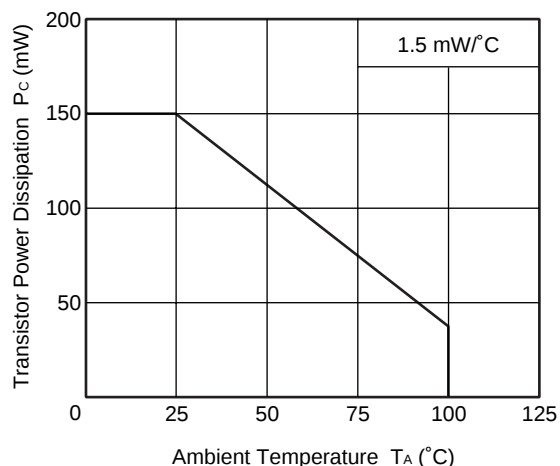
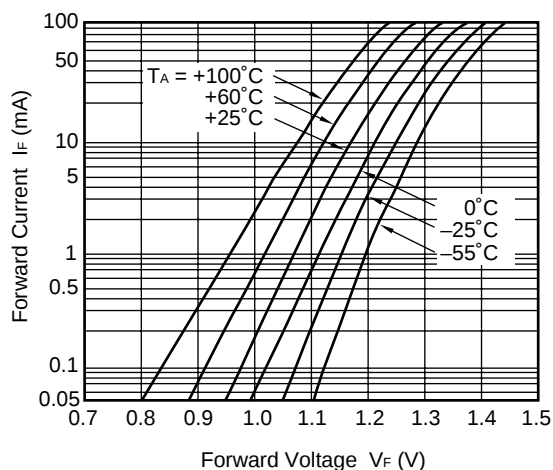
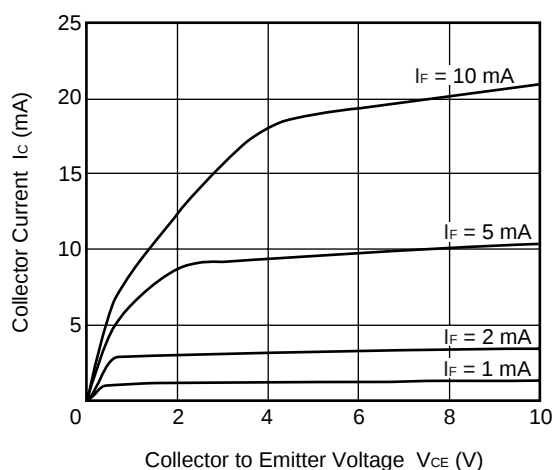
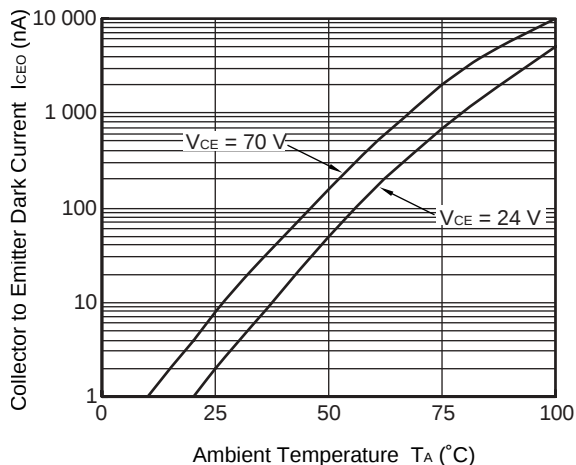
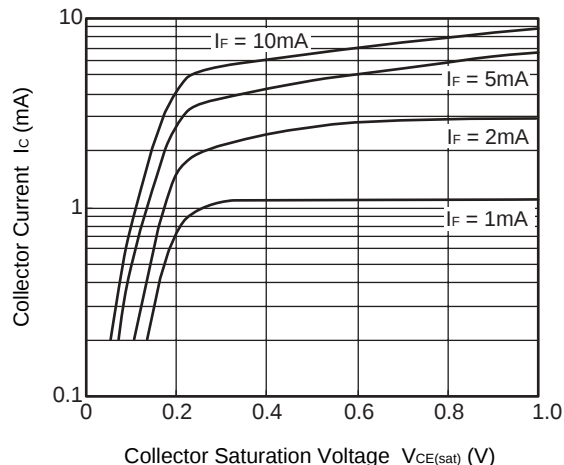
N : 50 to 300 (%)

H : 80 to 160 (%)

Q : 100 to 200 (%)

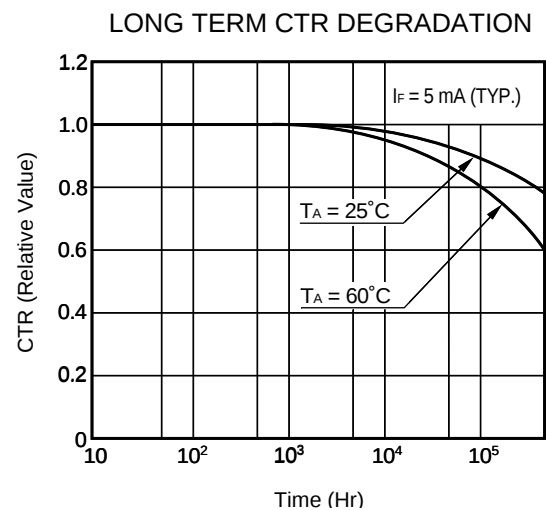
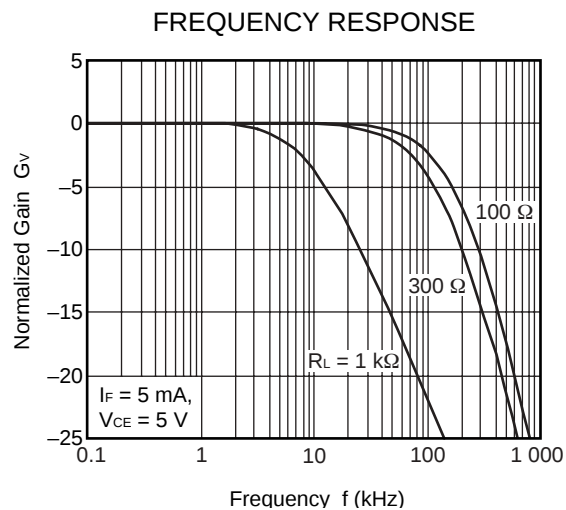
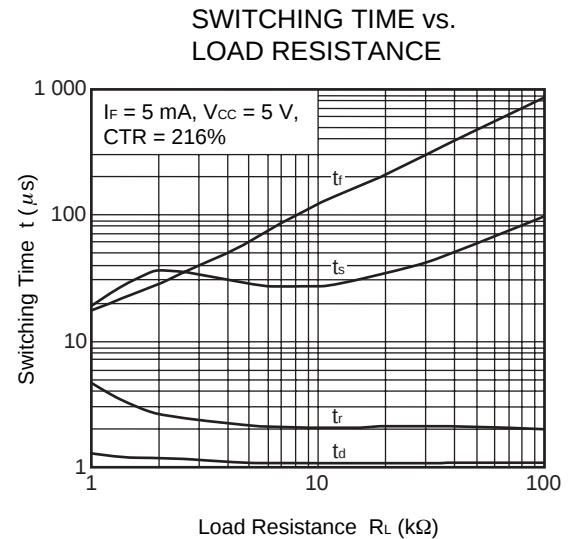
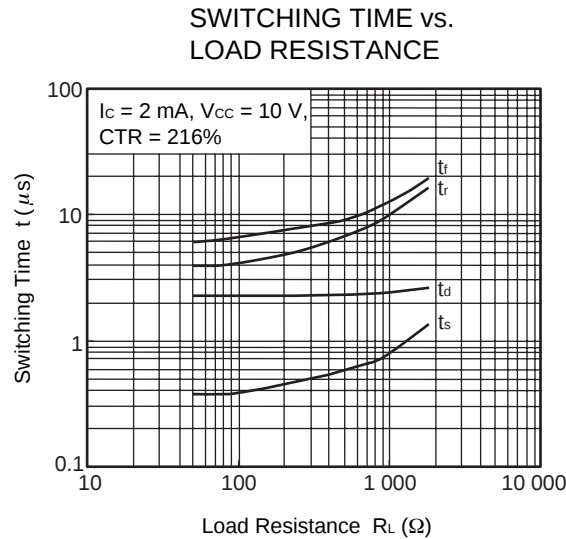
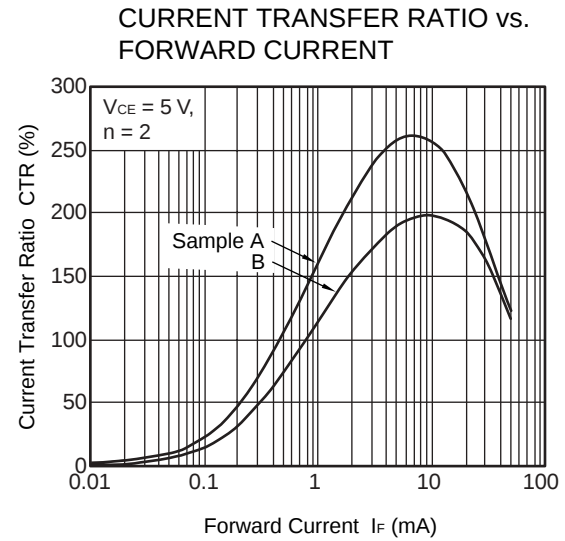
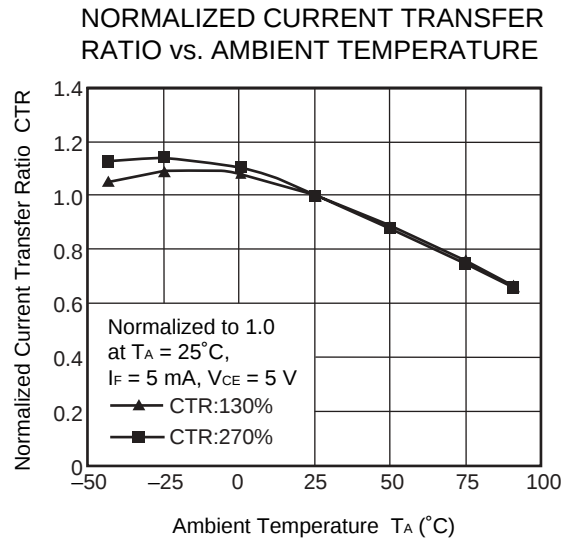
W : 130 to 260 (%)

***2** Test circuit for switching time

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)DIODE POWER DISSIPATION vs.
AMBIENT TEMPERATURETRANSISTOR POWER DISSIPATION
vs. AMBIENT TEMPERATUREFORWARD CURRENT vs.
FORWARD VOLTAGECOLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGECOLLECTOR TO EMITTER DARK
CURRENT vs. AMBIENT TEMPERATURECOLLECTOR CURRENT vs.
COLLECTOR SATURATION VOLTAGE

Remark The graphs indicate nominal characteristics.

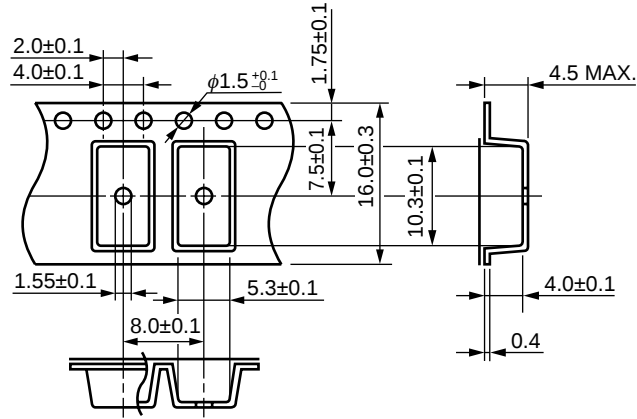
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)



Remark The graphs indicate nominal characteristics.

TAPING SPECIFICATIONS (UNIT : mm)

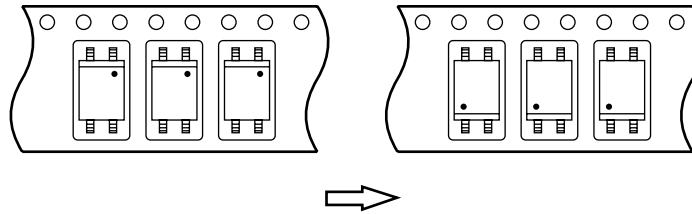
Outline and Dimensions (Tape)



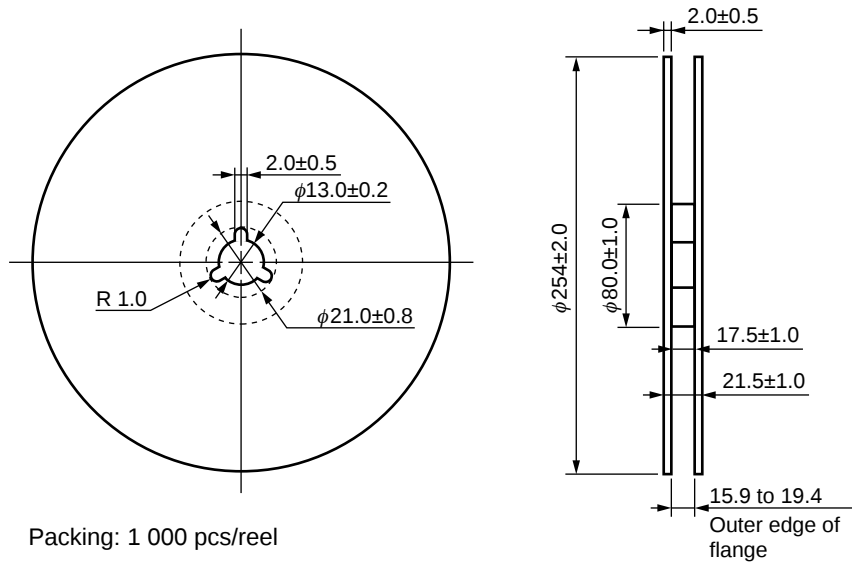
Tape Direction

PS2561AL-1-E3

PS2561AL-1-E4



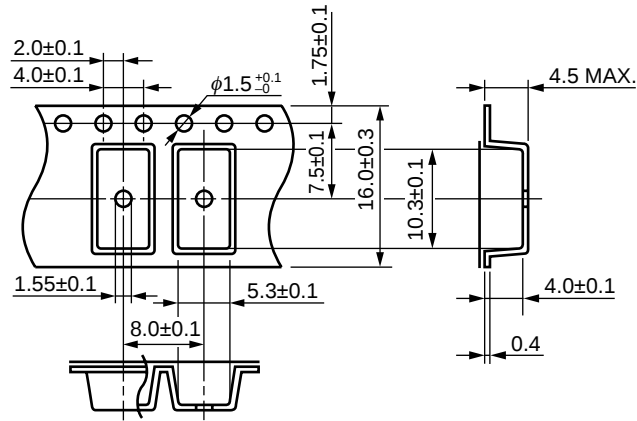
Outline and Dimensions (Reel)



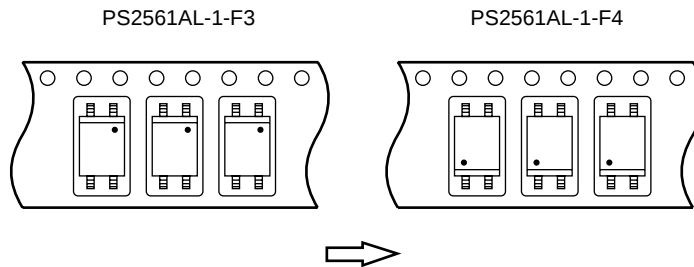
Packing: 1 000 pcs/reel

TAPING SPECIFICATIONS (UNIT : mm)

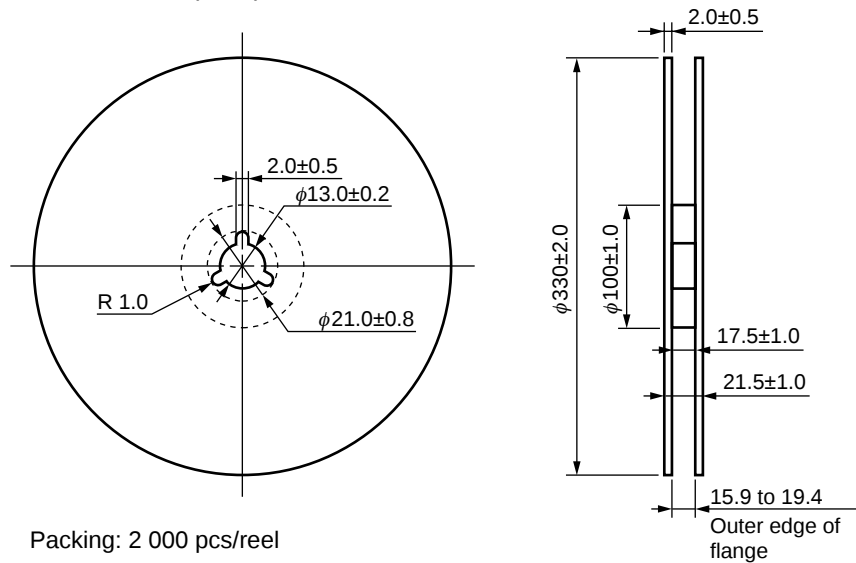
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)

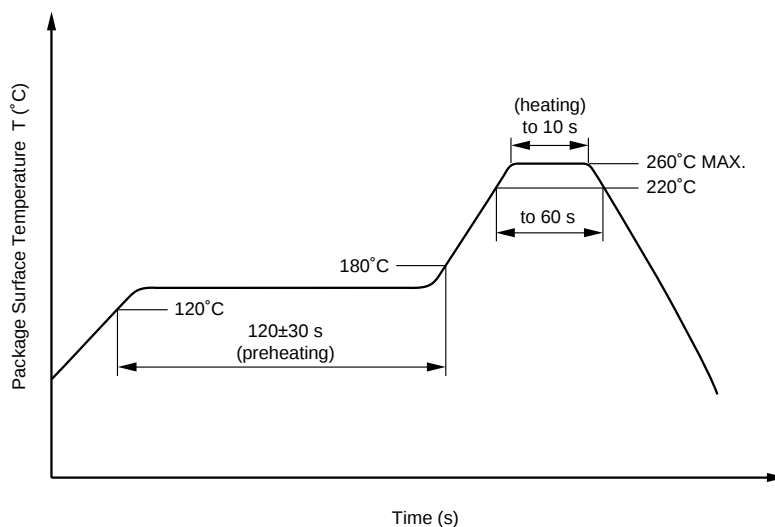


NOTES ON HANDLING

(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 (Allowed to be dipped in solder including plastic mold portion.)
- 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.

USAGE CAUTIONS

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

Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.