

**NEC**

PHOTOCOUPLER  
**PS2571-1,-4, PS2571L-1,-4**

**HIGH ISOLATION VOLTAGE SAFETY STANDARD TYPE  
MULTI PHOTOCOUPLER SERIES**

–NEPOC™ Series–

**DESCRIPTION**

The PS2571-1, -4 and PS2571L-1, -4 are optically coupled isolators containing GaAs light emitting diodes and NPN silicon phototransistors.

The PS2571-1, -4 are in a plastic DIP (Dual In-line Package) and the PS2571L-1, -4 are lead bending type (Gull-wing) for surface mount.

★ **FEATURES**

- High isolation voltage (BV = 5 000 Vr.m.s.)
- High current transfer ratio (CTR = 200 % TYP.)
- High-speed switching ( $t_r = 3 \mu s$  TYP.,  $t_f = 5 \mu s$  TYP.)
- Ordering number of taping product : PS2571L-1-E3, E4, F3, F4
- UL approved: File No. E72422 (S)
- BSI approved: No. 8343/8344
- CSA approved: No. CA 101391
- NEMKO approved: No. P98102650
- DEMKO approved: No. 308152
- SEMKO approved: No. 9832161/01
- FIMKO approved: No. F1 11899
- VDE0884 approved (Option)

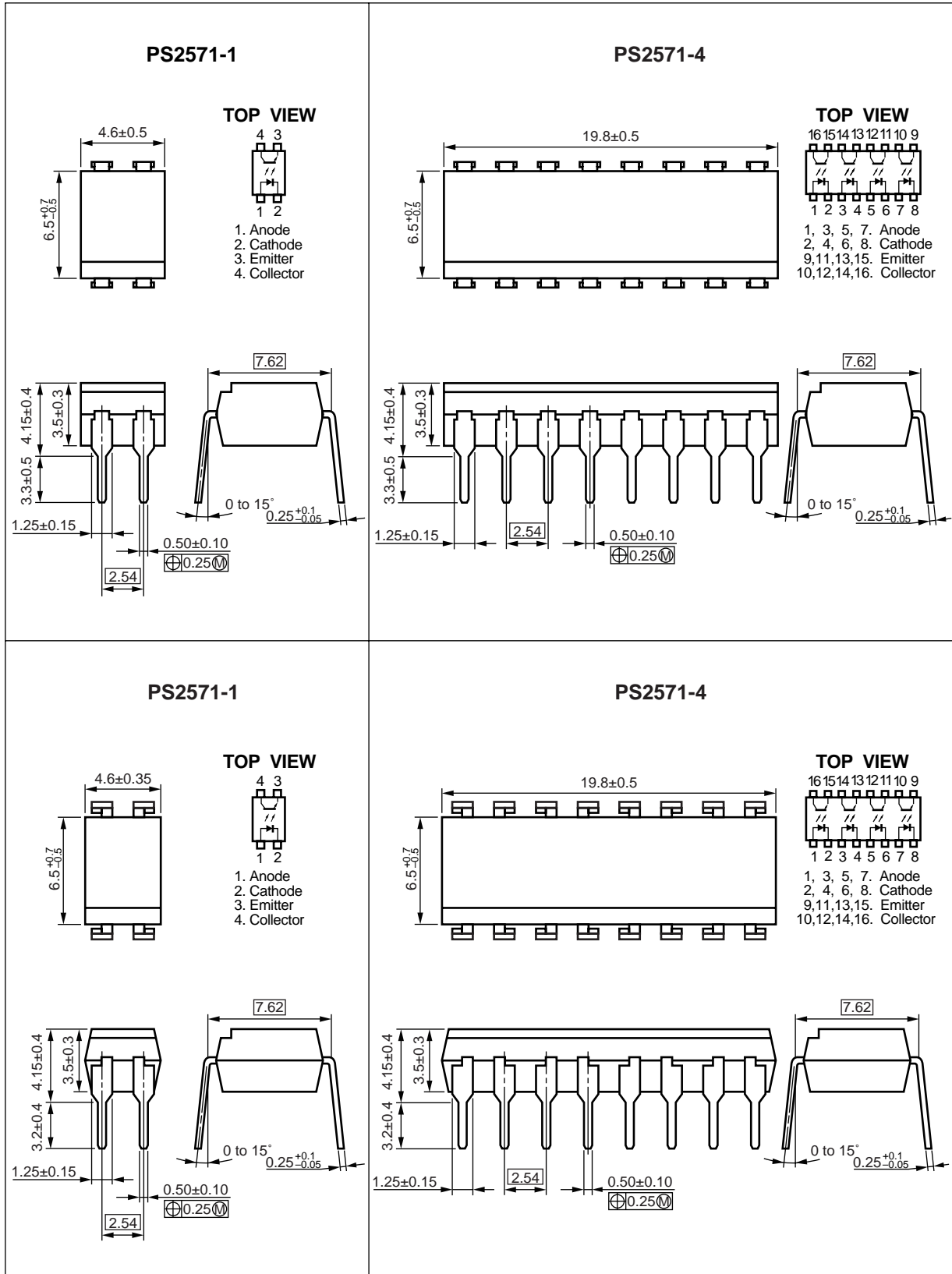
**APPLICATIONS**

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

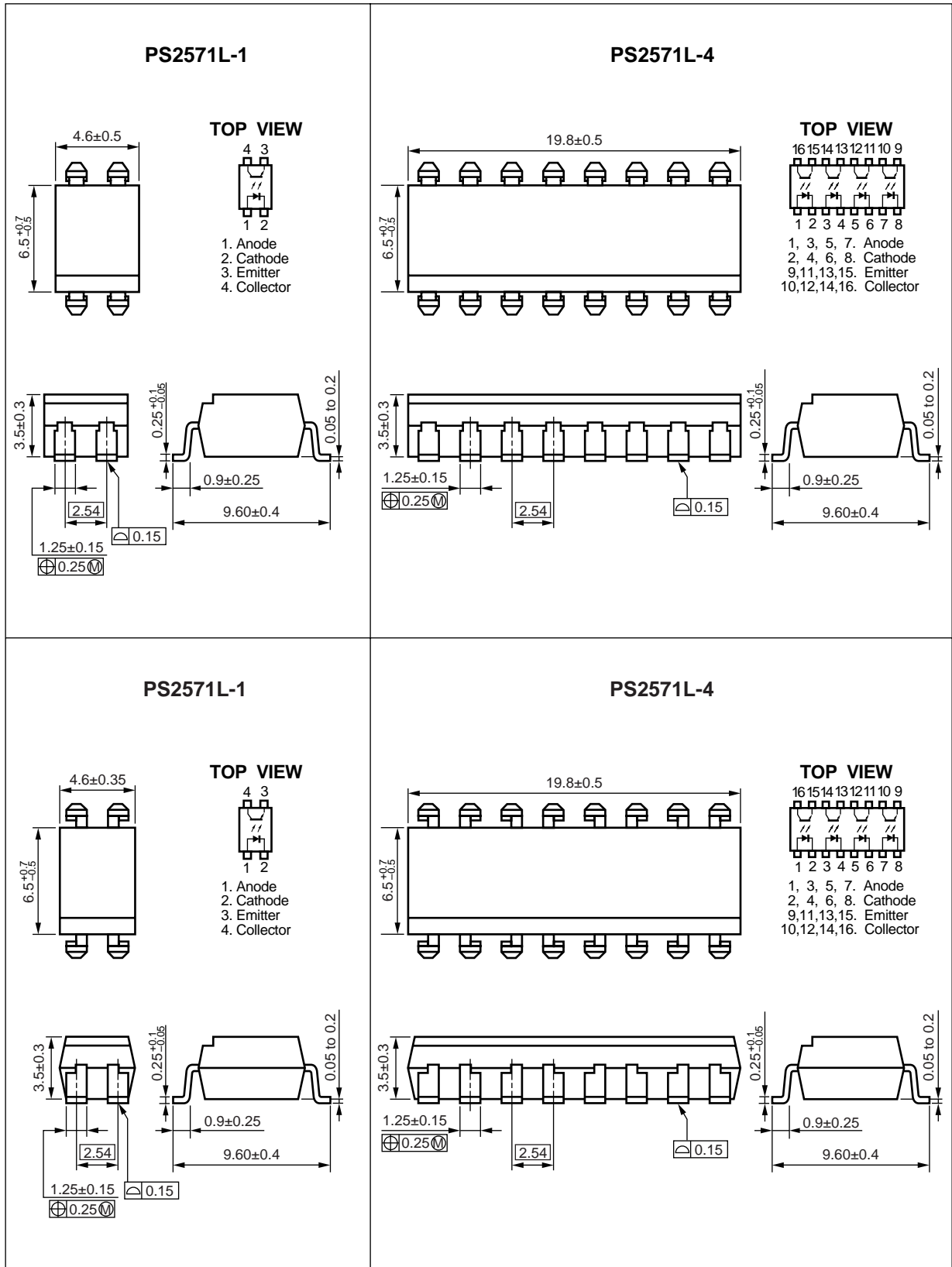
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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

★ PACKAGE DIMENSIONS (in millimeters)

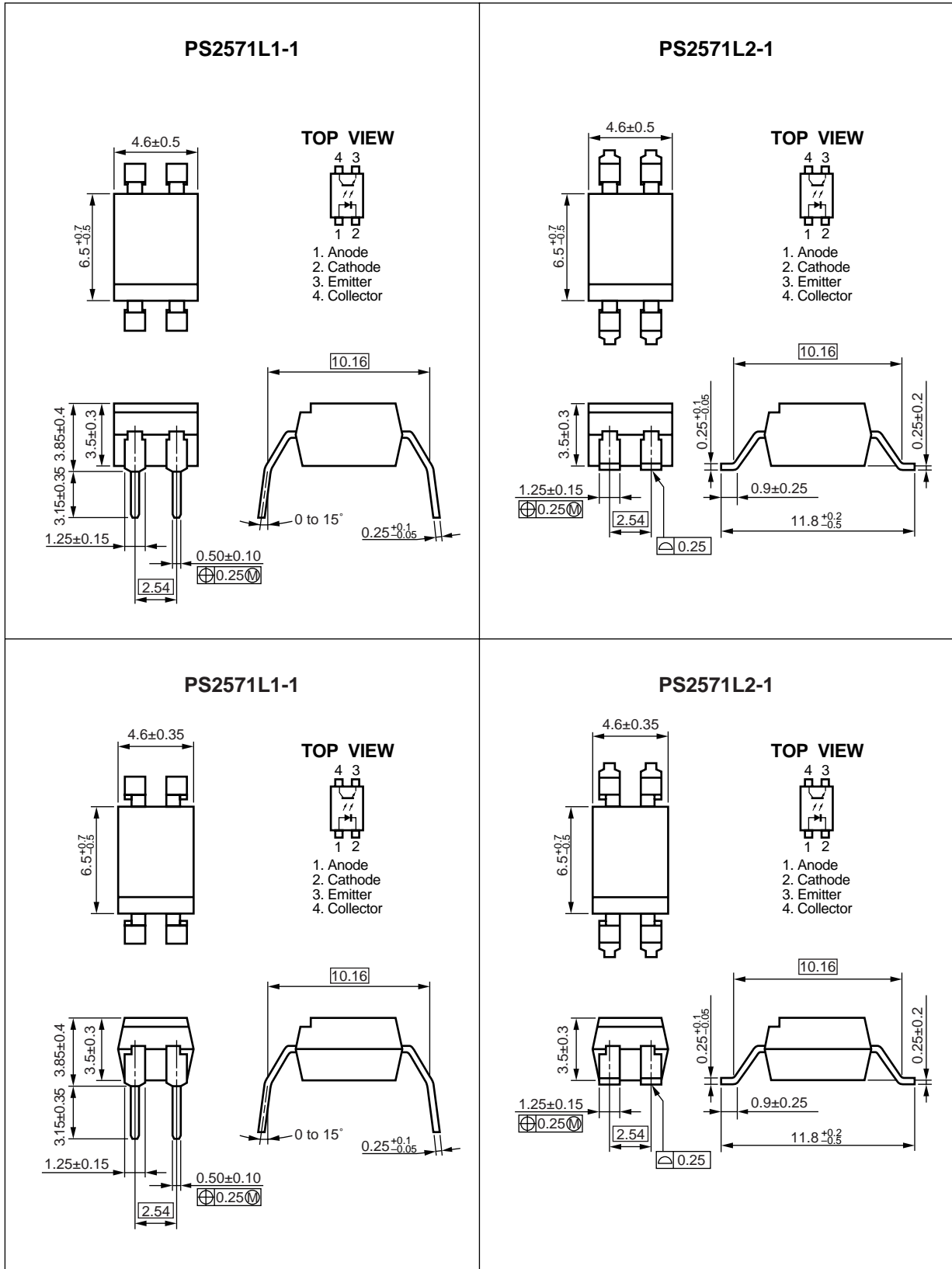
DIP type



Lead bending type



Lead bending type for long distance



**PHOTOCOUPLER CONSTRUCTION**

Parameter	Unit (MIN.)
Air Distance	7 mm
Outer Creepage Distance	7 mm
Inner Creepage Distance	4 mm
Isolation Thickness	0.4 mm

★ **ORDERING INFORMATION**

Part Number	Package	Packing Style	Safety Standard Approval	Application Part Number <sup>*1</sup>
PS2571-1	4-pin DIP	Magazine case 100 pcs	Standard products (UL, CSA, BSI, NEMKO, SEMKO, DEMKO, FIMKO approved)	PS2571-1
PS2571L-1		Embossed Tape 1 000 pcs/reel		
PS2571L-1-E3				
PS2571L-1-E4		Embossed Tape 2 000 pcs/reel		
PS2571L-1-F3				
PS2571L-1-F4				
PS2571-4	16-pin DIP	Magazine case 20 pcs		PS2571-4
PS2571L-4				
PS2571-1-V	4-pin DIP	Magazine case 100 pcs	VDE0884 approved products (Option)	PS2571-1
PS2571L-1-V		Embossed Tape 1 000 pcs/reel		
PS2571L-1-V-E3				
PS2571L-1-V-E4		Embossed Tape 2 000 pcs/reel		
PS2571L-1-V-F3				
PS2571L-1-V-F4				
PS2571-4-V	16-pin DIP	Magazine case 20 pcs		PS2571-4
PS2571L-4-V				

\*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
			PS2571-1, PS2571L-1	PS2571-4, PS2571L-4	
Diode	Forward Current (DC)	I <sub>F</sub>	50		mA
	Reverse Voltage	V <sub>R</sub>	6		V
	Power Dissipation Derating	ΔP <sub>D</sub> /°C	0.7	0.55	mW/°C
	Power Dissipation	P <sub>D</sub>	70	55	mW/ch
	Peak Forward Current *1	I <sub>FP</sub>	1		A
Transistor	Collector to Emitter Voltage	V <sub>CEO</sub>	40		V
	Emitter to Collector Voltage	V <sub>ECO</sub>	5		V
	Collector Current	I <sub>C</sub>	40		mA/ch
	Power Dissipation Derating	ΔP <sub>C</sub> /°C	1.5	1.2	mW/°C
	Power Dissipation	P <sub>C</sub>	150	120	mW/ch
Isolation Voltage *2		BV	5 000		Vr.m.s.
Operating Ambient Temperature		T <sub>A</sub>	-55 to +100		°C
Storage Temperature		T <sub>stg</sub>	-55 to +150		°C

\*1 PW = 100 μs, Duty Cycle = 1 %

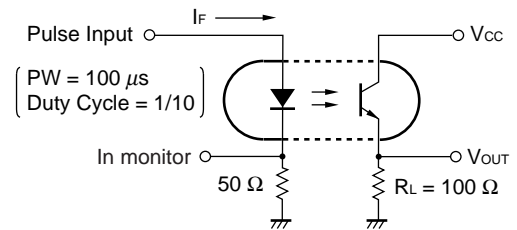
\*2 AC voltage for 1 minute at T<sub>A</sub> = 25 °C, RH = 60 % between input and output

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	μA
	Terminal Capacitance	C <sub>t</sub>	V = 0 V, f = 1.0 MHz		50		pF
Transistor	Collector to Emitter Dark Current	I <sub>CEO</sub>	V <sub>CE</sub> = 40 V, I <sub>F</sub> = 0 mA			100	nA
Coupled	Current Transfer Ratio (I <sub>c</sub> /I <sub>F</sub> ) <sup>*1</sup>	CTR	I <sub>F</sub> = 5 mA, V <sub>CE</sub> = 5 V	80	200	400	%
	Collector Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> = 10 mA, I <sub>c</sub> = 2 mA			0.3	V
	Isolation Resistance	R <sub>I-O</sub>	V <sub>I-O</sub> = 1.0 kV <sub>DC</sub>	10 <sup>11</sup>			Ω
	Isolation Capacitance	C <sub>I-O</sub>	V = 0 V, f = 1.0 MHz		0.5		pF
	Rise Time <sup>*2</sup>	t <sub>r</sub>	V <sub>CC</sub> = 10 V, I <sub>c</sub> = 2 mA, R <sub>L</sub> = 100 Ω		3		μs
	Fall Time <sup>*2</sup>	t <sub>f</sub>			5		

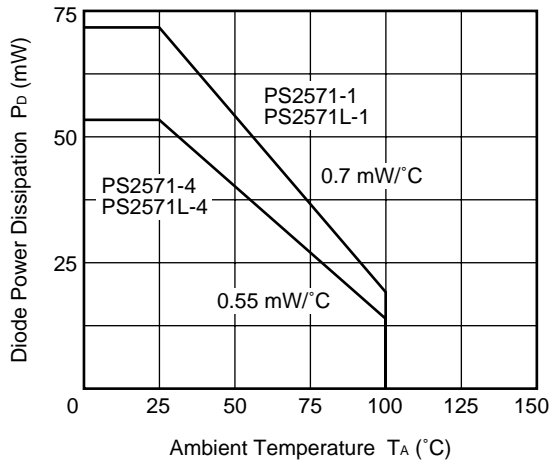
\*1 CTR rank (PS2571-1,PS2571L-1 only)  
D : 100 to 300 %

\*2 Test Circuit for Switching Time

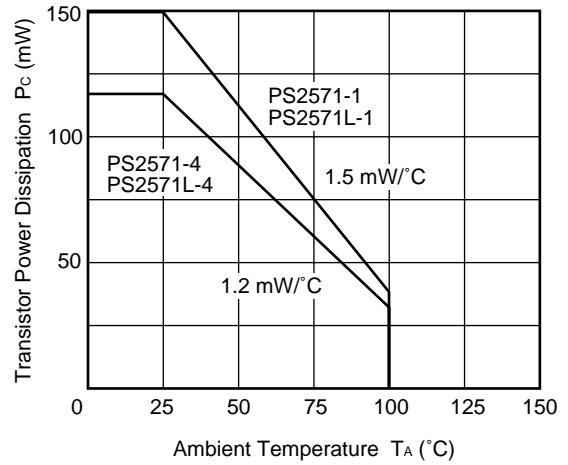


TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C, unless otherwise specified)

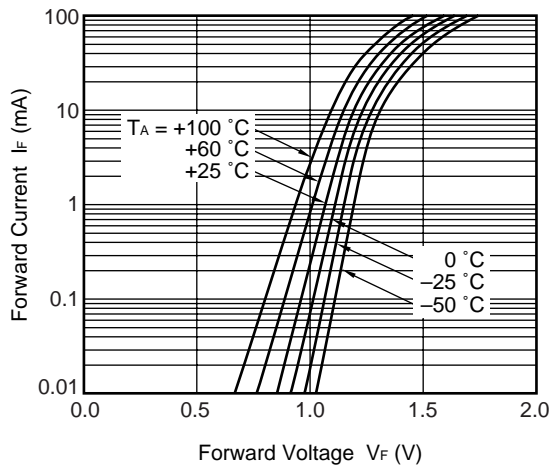
DIODE POWER DISSIPATION vs. AMBIENT TEMPERATURE



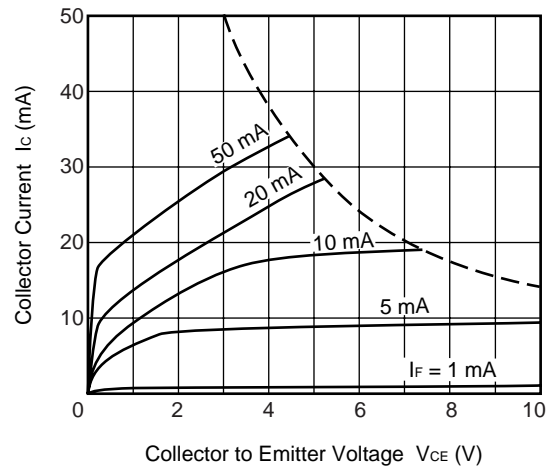
TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE



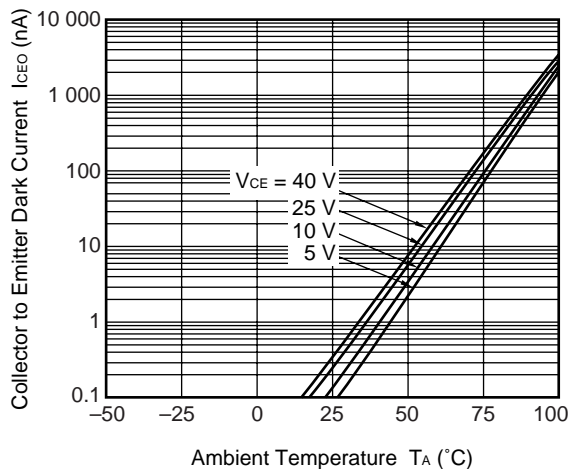
FORWARD CURRENT vs. FORWARD VOLTAGE



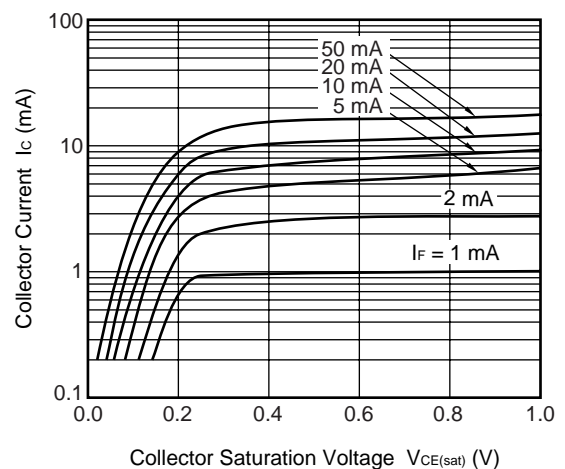
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE

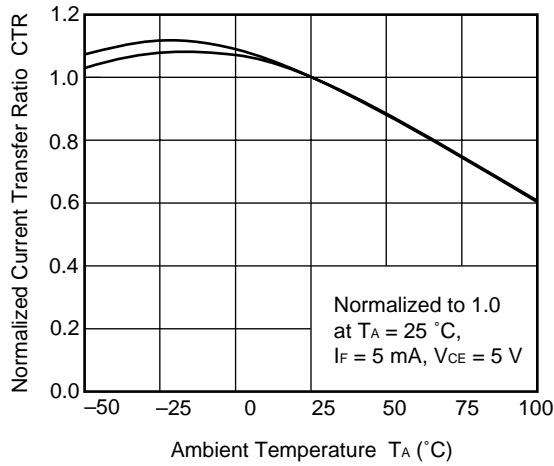


COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE

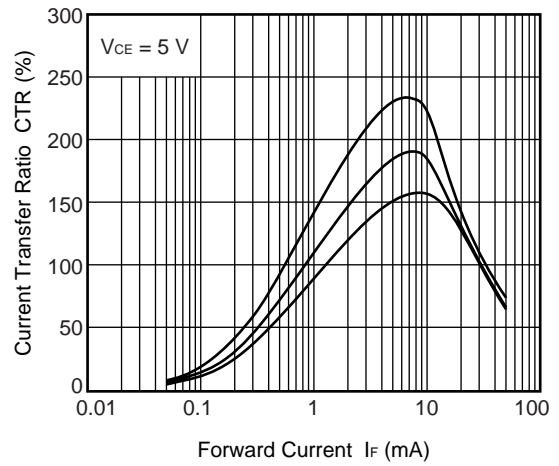




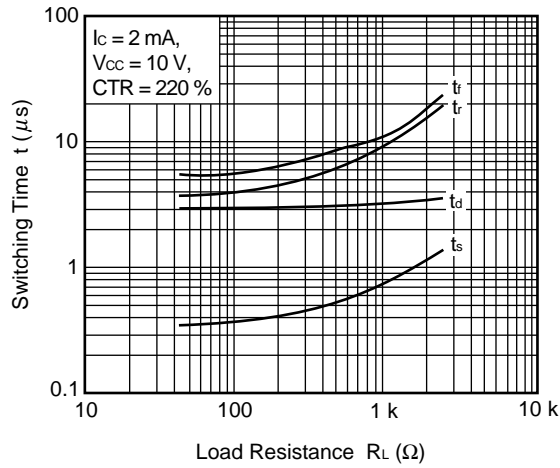
NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE



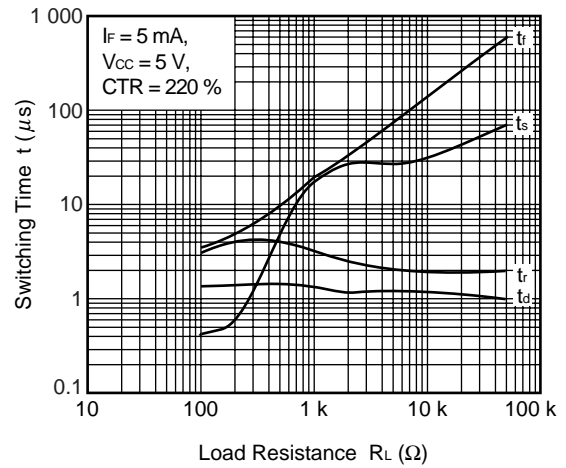
CURRENT TRANSFER RATIO vs. FORWARD CURRENT



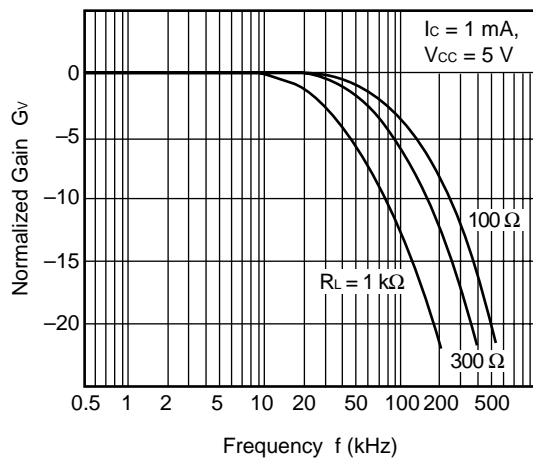
SWITCHING TIME vs. LOAD RESISTANCE



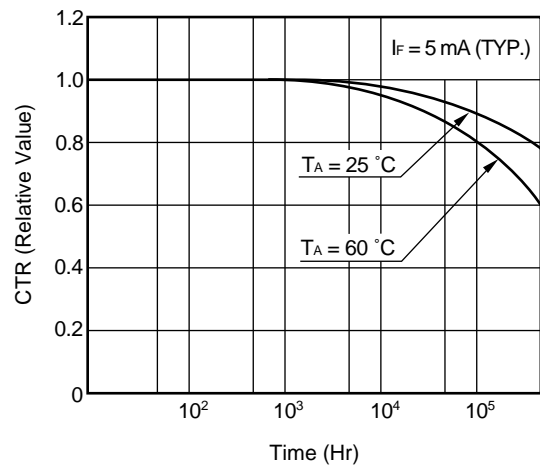
SWITCHING TIME vs. LOAD RESISTANCE



FREQUENCY RESPONSE



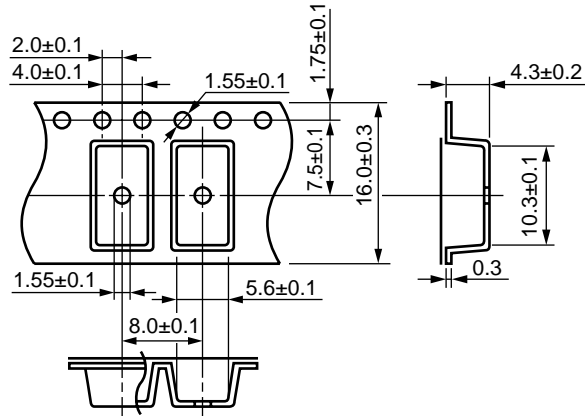
LONG TERM CTR DEGRADATION



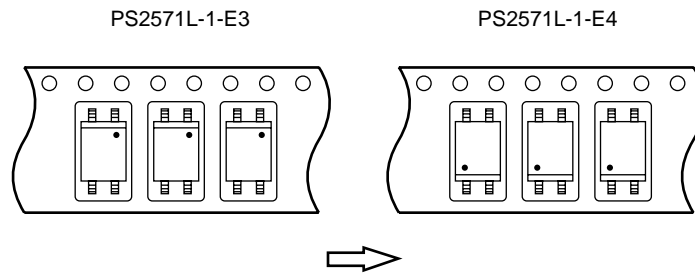
**Remark** The graphs indicate nominal characteristics.

★ TAPING SPECIFICATIONS (in millimeters)

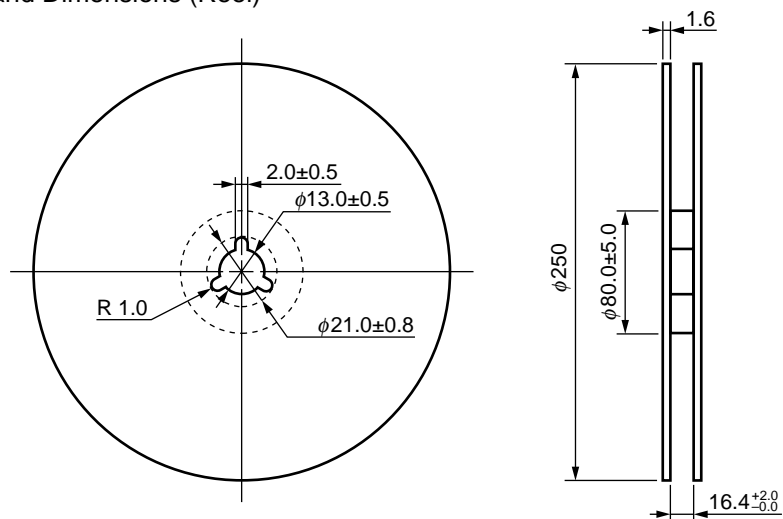
Outline and Dimensions (Tape)



Tape Direction

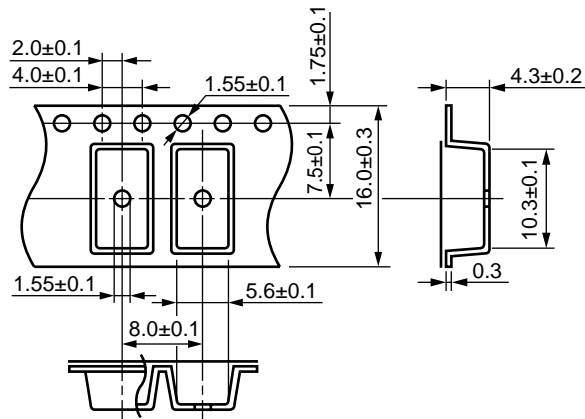


Outline and Dimensions (Reel)

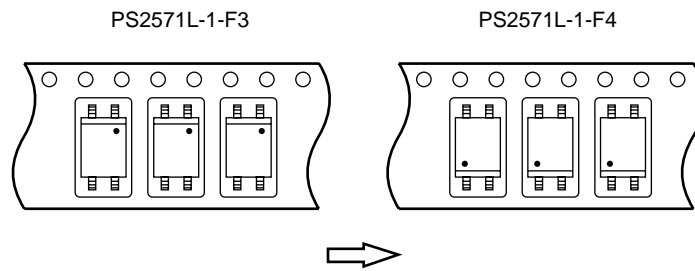


Packing: 1 000 pcs/reel

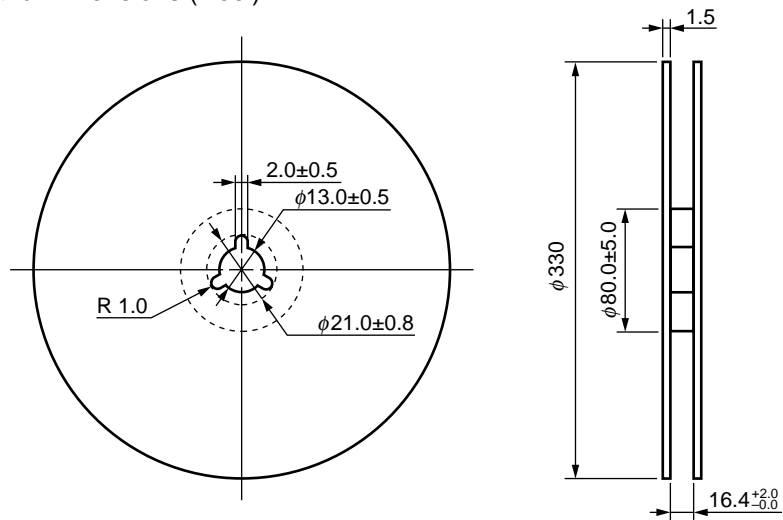
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



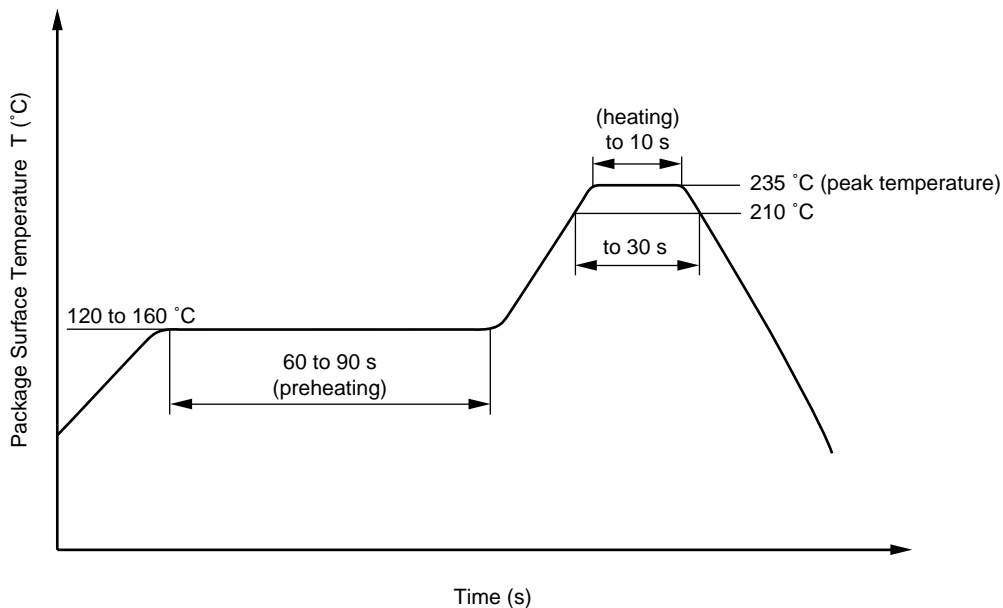
Packing: 2 000 pcs/reel

**RECOMMENDED SOLDERING CONDITIONS**

**(1) Infrared reflow soldering**

- Peak reflow temperature 235 °C (package surface temperature)
- Time of temperature higher than 210 °C 30 seconds or less
- 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) Dip soldering**

- Temperature 260 °C or below (molten solder temperature)
- Time 10 seconds or less
- 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.

[MEMO]

[MEMO]

[MEMO]

**CAUTION**

**Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. Please do not under any circumstances break the hermetic seal.**

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