PS2561F-1, PS2561FL-1

R08DS0033EJ0300
Rev.3.00
Jan. 13, 2026

DIP PHOTOCOUPLER, OPERATING AMBIENT TEMPERATURE 110 °C

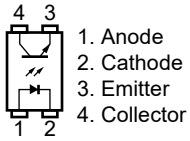
DESCRIPTION

The PS2561F-1 is an optically coupled isolator containing a GaAs light emitting diode and an NPN silicon phototransistor.
The PS2561F-1 is in a plastic DIP (Dual In-line Package) and the PS2561FL-1 is lead bending type (Gull-wing) for surface mount.

FEATURES

- Operating ambient temperature: 110 °C
- High Isolation voltage (BV = 5 000 Vr.m.s.)
- High collector to emitter voltage (V_{CEO} = 80 V)
- High current transfer ratio (CTR = 450 % TYP.)
- High-speed switching (t_r = 5 μs TYP., t_f = 7 μs TYP.)
- Embossed tape product: PS2561FL-1-F3 : 2 000 pcs/reel
- Pb-free product
- Safety standard
  - UL approved: UL 1577, Double protection

PIN CONNECTION
(Top View)



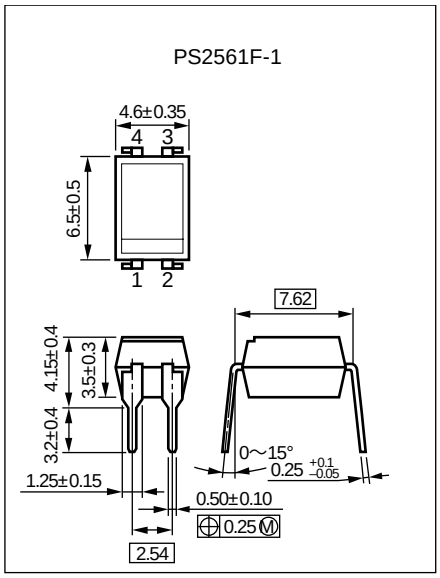
1. Anode
2. Cathode
3. Emitter
4. Collector

APPLICATIONS

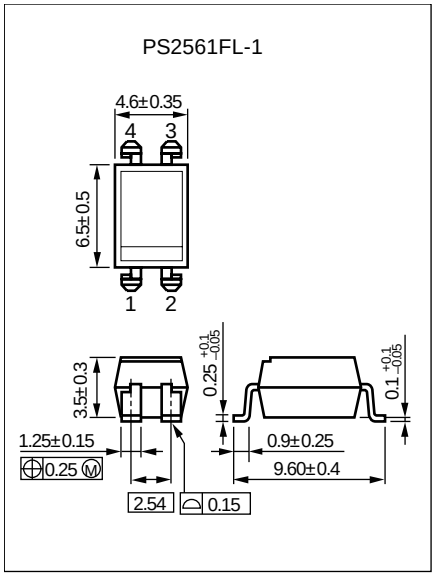
- Power meter
- Telephone/FAX.
- FA/OA equipment
- Programmable logic controller

PACKAGE DIMENSIONS (UNIT: mm)

DIP Type



Lead Bending Type

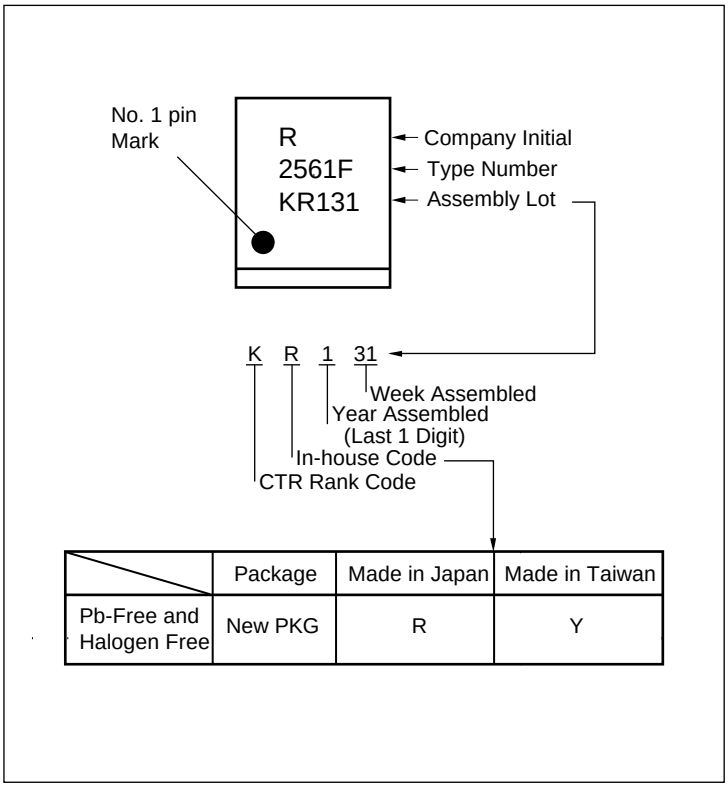


Weight：(4-pin DIP)：0.26 g (TYP.)

PHOTOCOUPLER CONSTRUCTION

Parameter	PS2561F-1, PS2561FL-1
Air Distance (MIN.)	7 mm
Creepage Distance (MIN.)	7 mm
Isolation Distance (MIN.)	0.4 mm

MARKING EXAMPLE



	Package	Made in Japan	Made in Taiwan
Pb-Free and Halogen Free	New PKG	R	Y

ORDERING INFORMATION

Part Number	Order Number *1	Solder Plating Specification	Packing Style	Safety Standard Approval	Application Part Number *2
PS2561F-1	PS2561F-1Y-A	Pb-Free and Halogen Free	Magazine case 100 pcs	UL Approved	PS2561F-1
PS2561FL-1	PS2561FL-1Y-A				PS2561FL-1
PS2561FL-1-F3	PS2561FL-1Y-F3-A		Embossed Tape 2 000 pcs/reel		

Notes: *1. When specifying CTR rank, please add “-CTR rank” after Order Number.

ex. K rank : PS2561F-1Y-A-K

Notes: *2. For the application of the safety standard, the 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 *1	P_D	150	mW
	Peak Forward Current *2	I_{FP}	1	A
Transistor	Collector to Emitter Voltage	V_{CEO}	80	V
	Emitter to Collector Voltage	V_{ECO}	7	V
	Collector Current	I_C	50	mA
	Power Dissipation *3	P_C	150	mW
Isolation Voltage *4		BV	5 000	Vr.m.s.
Operating Ambient Temperature		T_A	–55 to +110	°C
Storage Temperature		T_{stg}	–55 to +150	°C

Notes:*1. Reduced to 1.5 mW/°C at T_A = 25 °C or more.

*2. PW = 100 µs, Duty Cycle = 1 %

*3. Reduced to 1.5 mW/°C at T_A = 25 °C or more.

*4. AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.
Pins 1-2 shorted together, 3-4 shorted together.

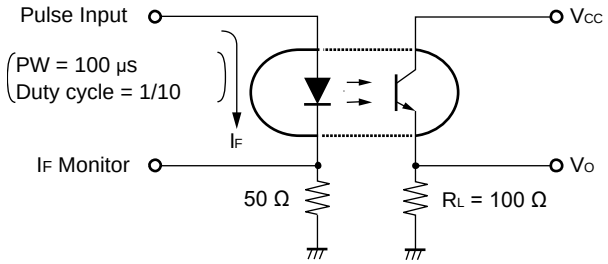
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

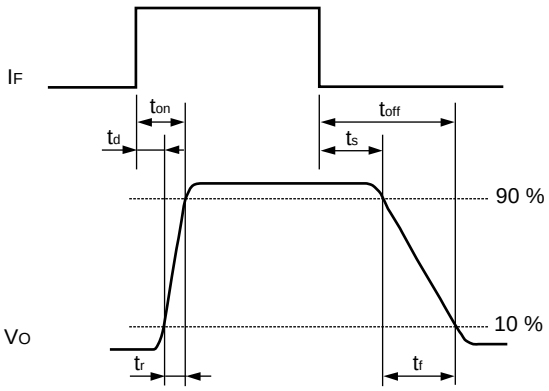
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F	I_F = 10 mA		1.2	1.4	V
	Reverse Current	I_R	V_R = 5 V			5	μA
	Terminal Capacitance	C_t	V = 0 V, f = 1.0 MHz		10		pF
Transistor	Collector to Emitter Dark Current	I_{CEO}	I_F = 0 mA, V_{CE} = 80 V			100	nA
Coupled	Current Transfer Ratio (I_C/I_F) *1	CTR	I_F = 5 mA, V_{CE} = 5 V	300	450	600	%
			I_F = 1 mA, V_{CE} = 5 V	60			
	Collector Saturation Voltage	$V_{CE (sat)}$	I_F = 10 mA, I_C = 2 mA			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		0.5		pF
	Rise Time *2	t_r	V_{CC} = 10 V, I_C = 2 mA,		5	18	μs
	Fall Time *2	t_f	R_L = 100 Ω		7	18	

Notes: *1. CTR rank

CTR Rank	CTR (%)	Conditions
K	300 to 600	I_F = 5 mA, V_{CE} = 5 V
	60 and larger	I_F = 1 mA, V_{CE} = 5 V

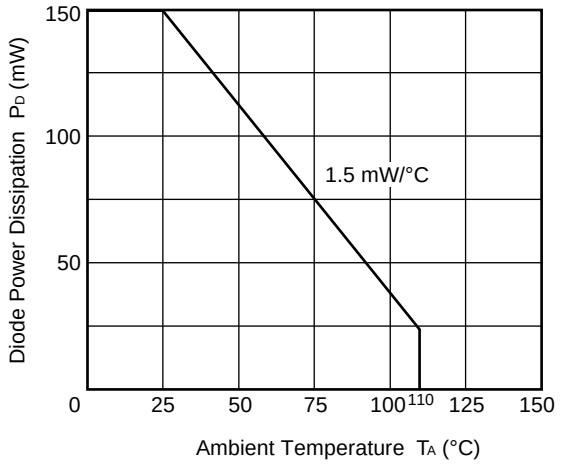
*2. Test circuit for switching time



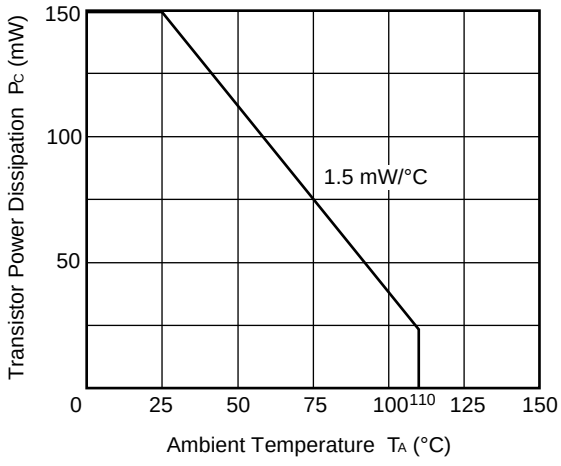


TYPICAL CHARACTERISTICS (T_A = 25°C, unless otherwise specified)

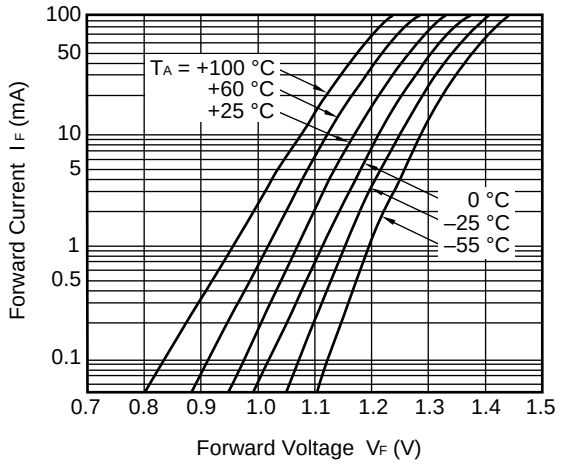
DIODE POWER DISSIPATION vs. AMBIENT TEMPERATURE



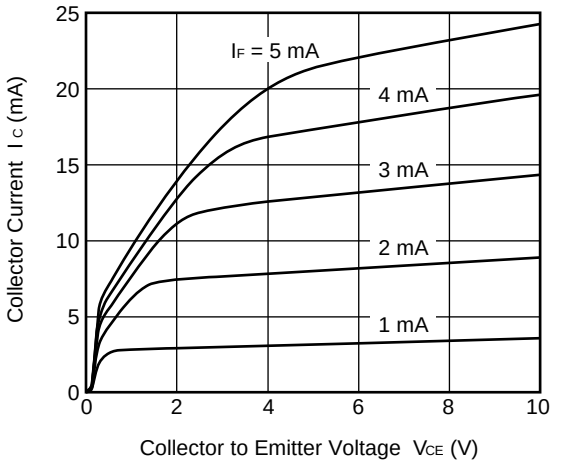
TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE



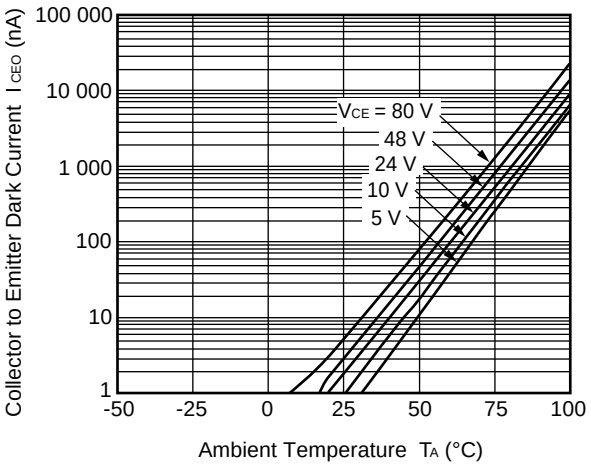
FORWARD CURRENT vs. FORWARD VOLTAGE



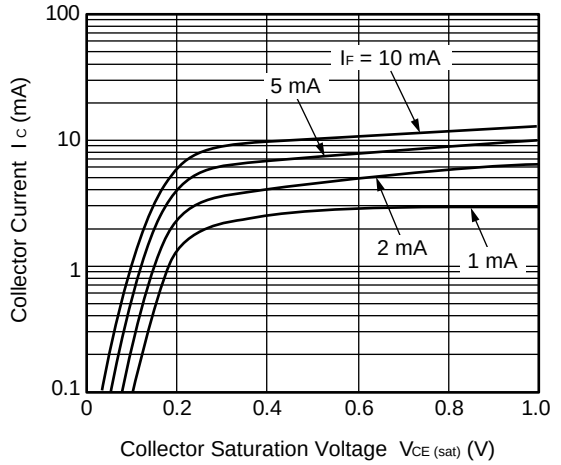
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE

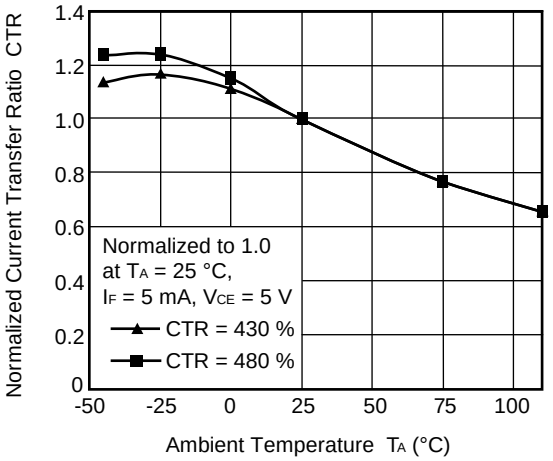


COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE

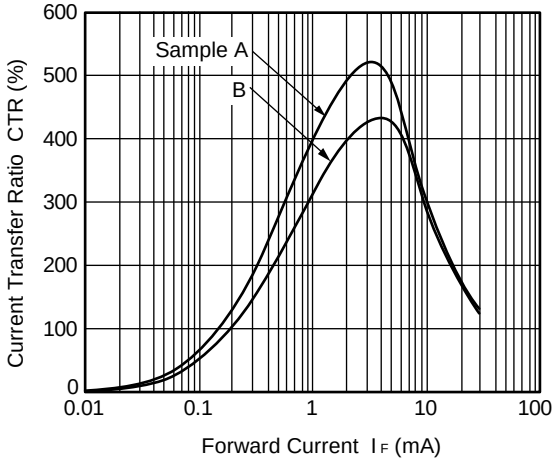


Remark The graphs indicate nominal characteristics.

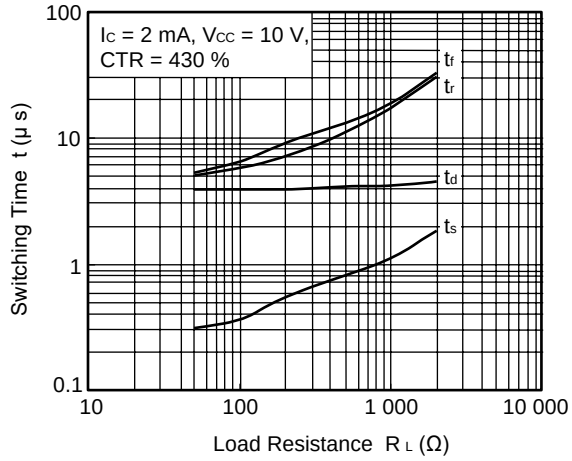
NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE



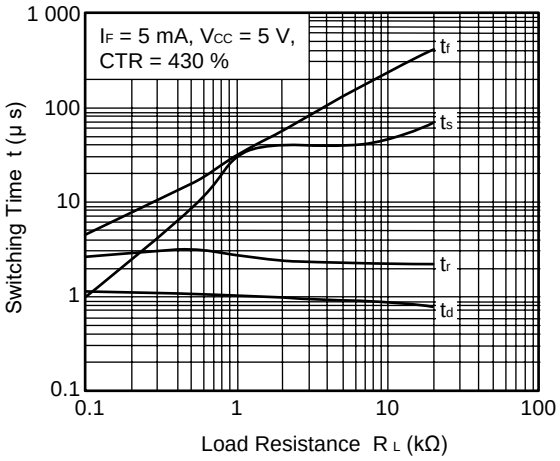
CURRENT TRANSFER RATIO vs. FORWARD CURRENT



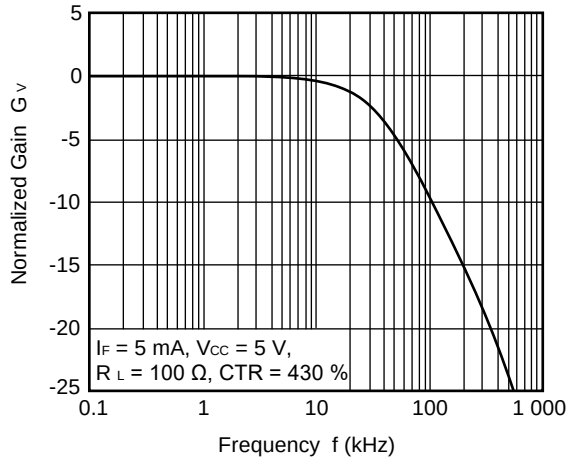
SWITCHING TIME vs. LOAD RESISTANCE



SWITCHING TIME vs. LOAD RESISTANCE

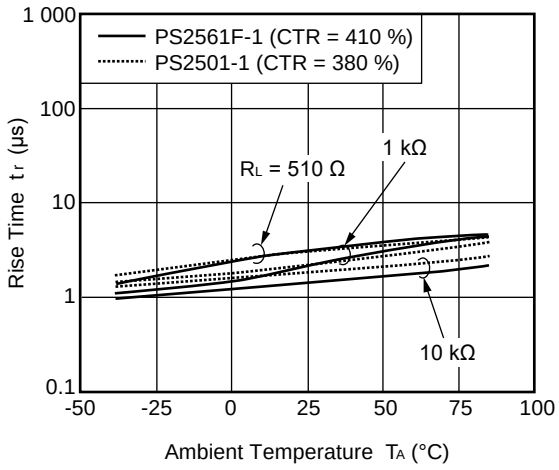


FREQUENCY RESPONSE

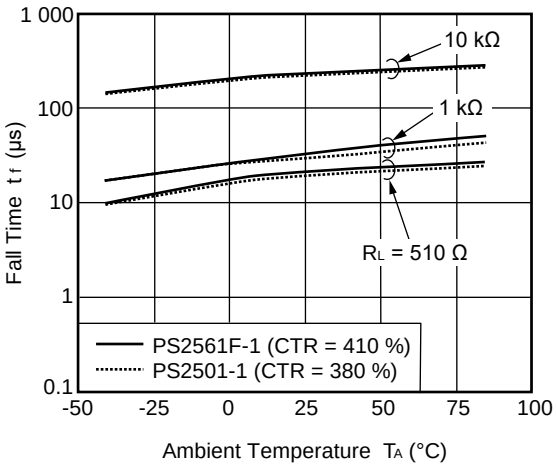


Remark The graphs indicate nominal characteristics.

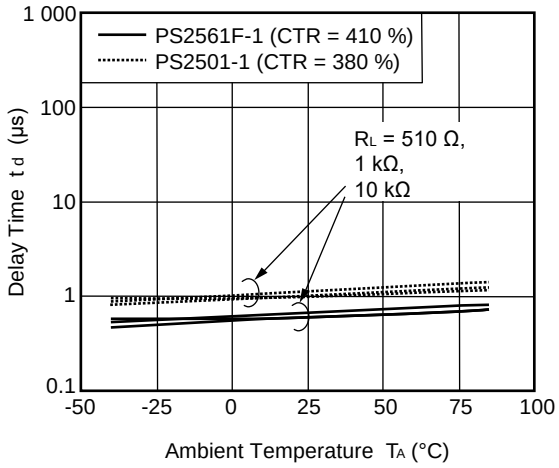
RISE TIME vs. AMBIENT TEMPERATURE *1



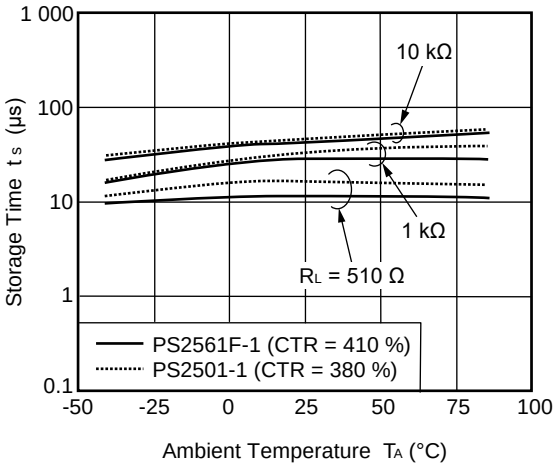
FALL TIME vs. AMBIENT TEMPERATURE *1



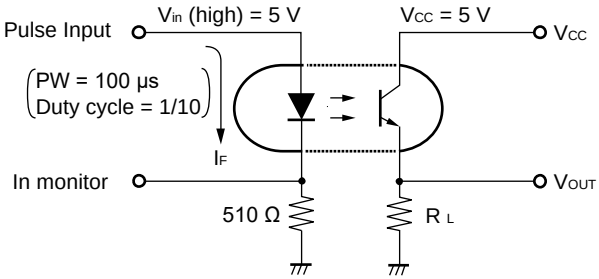
DELAY TIME vs. AMBIENT TEMPERATURE *1

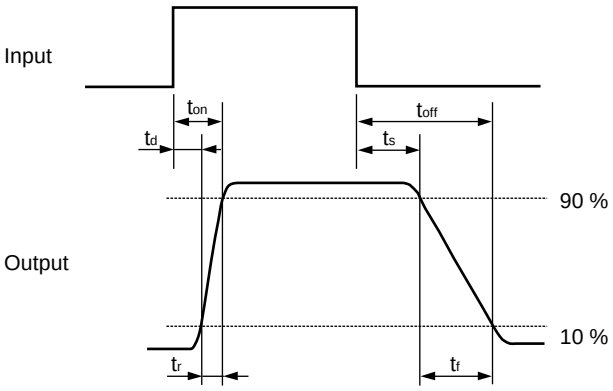


STORAGE TIME vs. AMBIENT TEMPERATURE *1



*1 Test circuit for switching time above



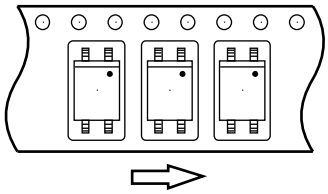


Remark The graphs indicate nominal characteristics.

TAPING SPECIFICATIONS (UNIT: mm)

Tape Direction

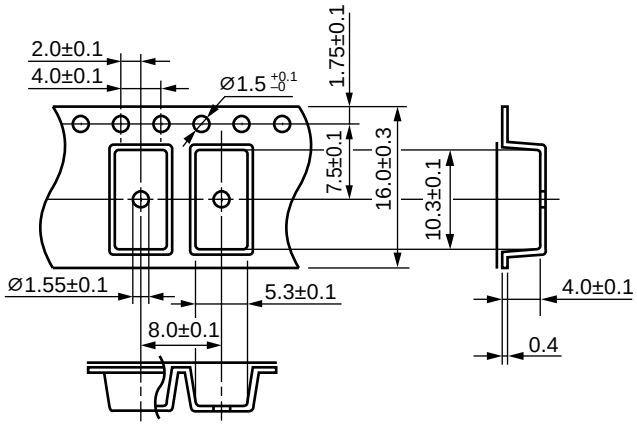
PS2561FL-1-F3



Direction of feed

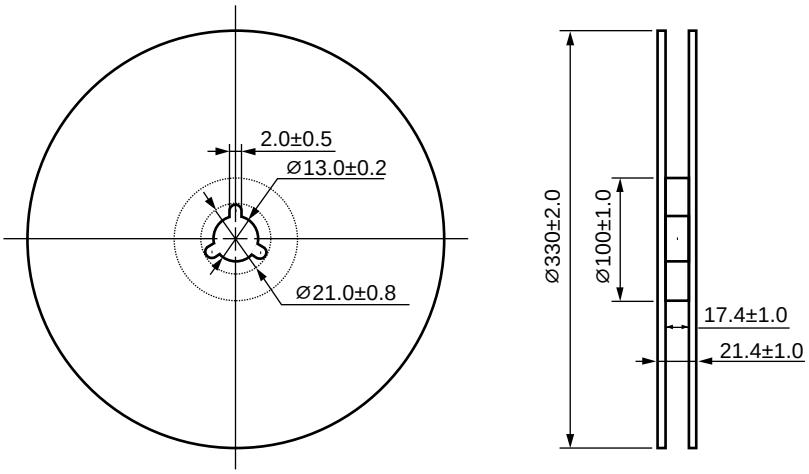
Outline and Dimensions (Tape)

Unit : mm



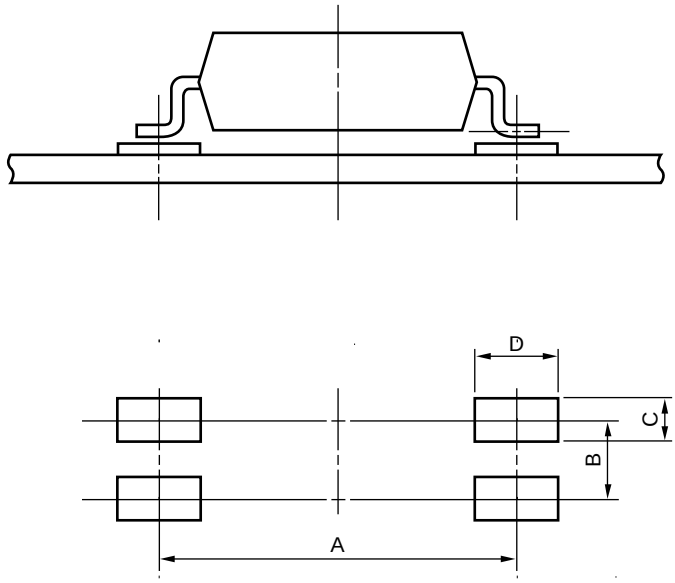
Outline and Dimensions (Reel)

Unit : mm



Packing: 2 000 pcs/reel

RECOMMENDED MOUNT PAD DIMENSIONS (UNIT: mm)



Part Number	Lead Bending	A	B	C	D
PS2561FL	lead bending type (Gull-wing) for surface mount	8.2	2.54	1.7	2.2

Remark All dimensions in this figure must be evaluated before use.

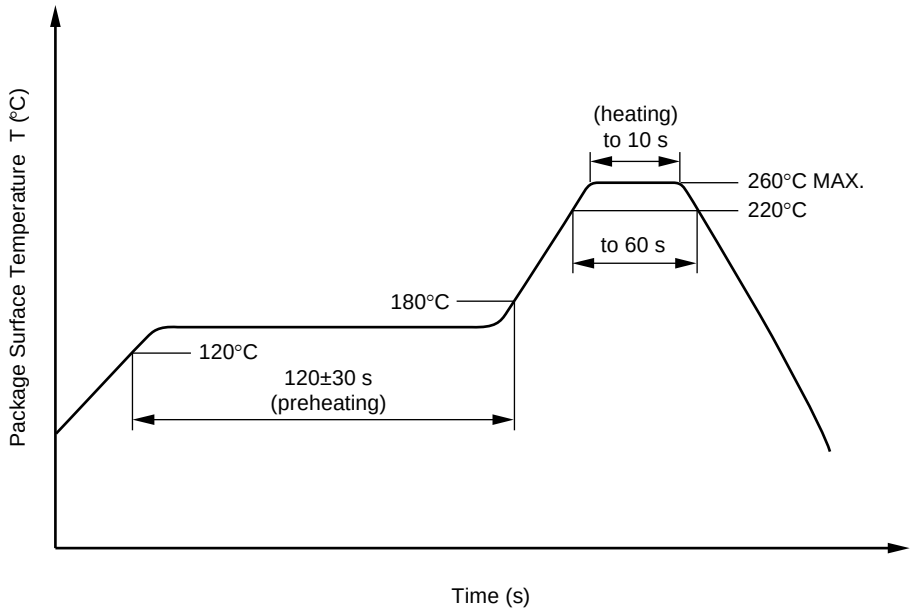
NOTES ON HANDLING

1. Recommended soldering conditions

(1) Infrared reflow soldering

- Peak reflow temperature — 260 °C or below (package surface temperature)
- Time of peak reflow temperature — 10 s or less
- Time of temperature higher than 220 °C — 60 s 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 s 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) Soldering by Soldering Iron

- Peak temperature (lead part temperature) — 350 °C or below
- Time (per one side) — 3 s or less
- Flux — Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)
- Place — 1.5 to 2.0 mm or more away from the root of the lead

(4) Cautions

- Flux cleaning — Avoid cleaning with Freon- or halogen-based (chlorinated etc.) solvents.
- Fixing/Coating — Do not use fixing agents or coatings containing halogen-based substances

2. Cautions regarding noise

Be aware that when voltage is applied suddenly between the photocoupler's input and output at startup, the output transistor may enter the on state, even if the voltage is within the absolute maximum ratings.

3. Measurement conditions of current transfer ratios (CTR), which differ according to photocoupler

Check the setting values before use, since the forward current conditions at CTR measurement differ according to product.

When using products other than at the specified forward current, the characteristics curves may differ from the standard curves due to CTR value variations or the like. Therefore, check the characteristics under the actual operating conditions and thoroughly take variations or the like into consideration before use.

USAGE CAUTIONS

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

Caution GaAs Products	This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points. • Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth.

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