

**HIGH ISOLATION VOLTAGE
AC INPUT RESPONSE TYPE
4-PIN SOP PHOTOCOUPLER**

-NEPOC™ Series-

DESCRIPTION

The PS2765-1 is an optically coupled isolator containing GaAs light emitting diodes and an NPN silicon phototransistor.

This package is mounted in a plastic SOP (Small Outline Package) for high density applications.

The package has shield effect to cut off ambient light.

★ FEATURES

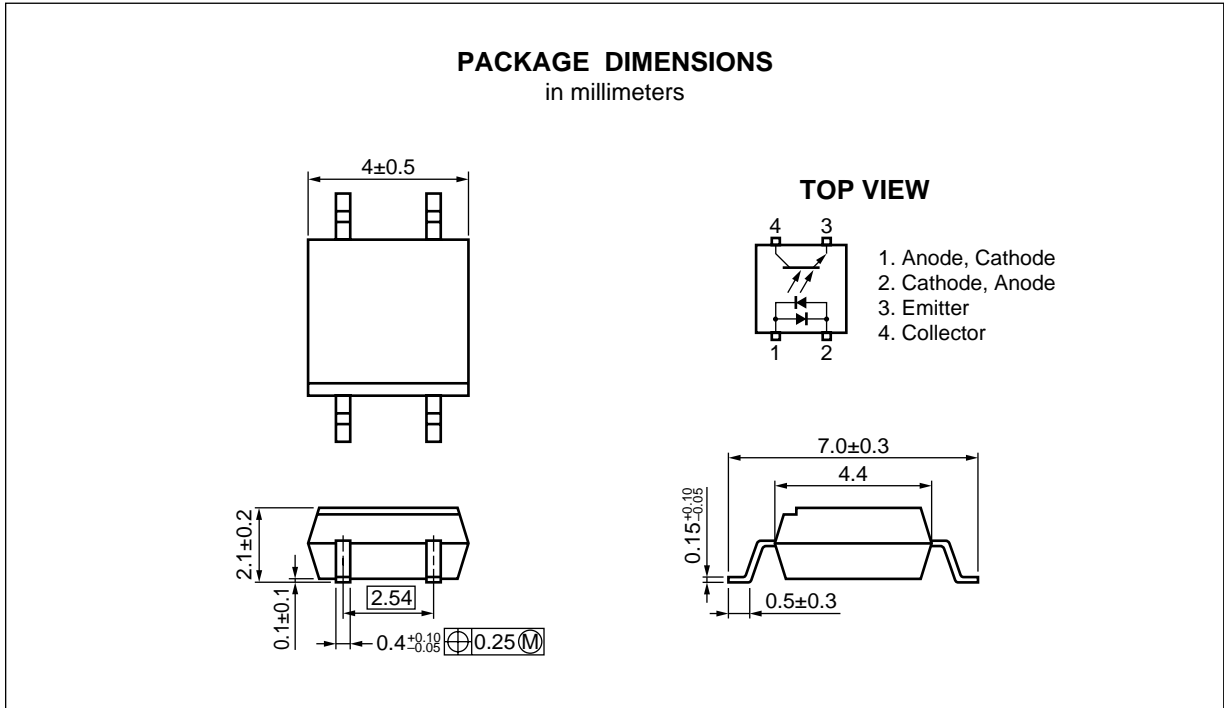
- Isolation distance (0.4 mm MIN.)
- AC input response
- SOP (Small Outline Package) type
- High isolation voltage ($BV = 3\,750\text{ Vr.m.s.}$)
- High-speed switching ($t_r = 4\ \mu\text{s TYP.}$, $t_f = 5\ \mu\text{s TYP.}$)
- Ordering number of taping product: PS2765-1-F3, F4
- UL approved: File No. E72422 (S)
- BSI approved: No. 8436/8437

APPLICATIONS

- Hybrid IC
- Programmable logic controllers
- Power supply

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

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PHOTOCOUPLER CONSTRUCTION

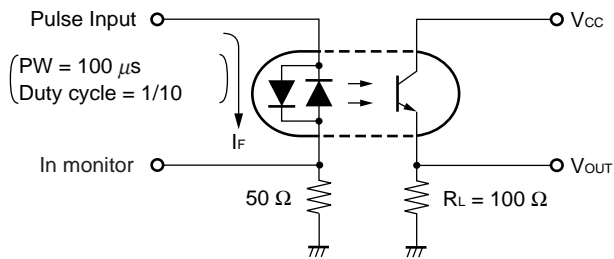
| Parameter | Unit (MIN.) |
|--------------------|-------------|
| Air Distance | 5 mm |
| Creepage Distance | 5 mm |
| Isolation Distance | 0.4 mm |

★ ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|-------------------------|--|----------------------|--|------------------|------|------|------|
| Diode | Forward Voltage | V _F | I _F = ± 5 mA | | 1.1 | 1.4 | V |
| | Terminal Capacitance | C _t | V = 0 V, f = 1 MHz | | 30 | | pF |
| Transistor | Collector to Emitter Dark Current | I _{CEO} | I _F = 0 mA, V _{CE} = 40 V | | | 100 | nA |
| Coupled | Current Transfer Ratio (I _c /I _F) ^{*1} | CTR | I _F = ± 5 mA, V _{CE} = 5 V | 50 | 100 | 400 | % |
| | 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 kV _{DC} | 10 ¹¹ | | | Ω |
| | Isolation Capacitance | C _{I-O} | V = 0 V, f = 1 MHz | | 0.4 | | pF |
| | Rise Time ^{*2} | t _r | V _{CC} = 5 V, I _c = 2 mA, R _L = 100 Ω | | 4 | | μs |
| Fall Time ^{*2} | t _f | | | 5 | | | |

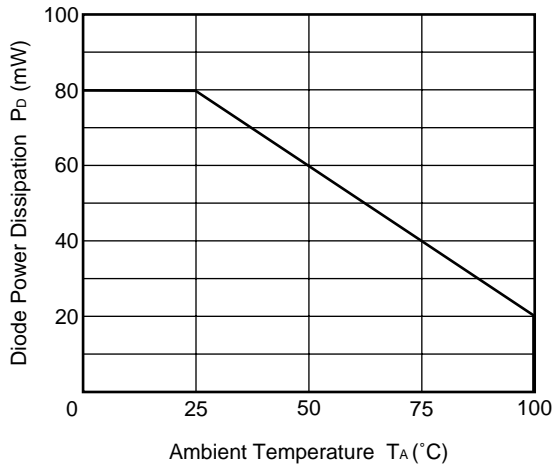
★ *1 CTR rank
N: 50 to 400 (%)

*2 Test circuit for switching time

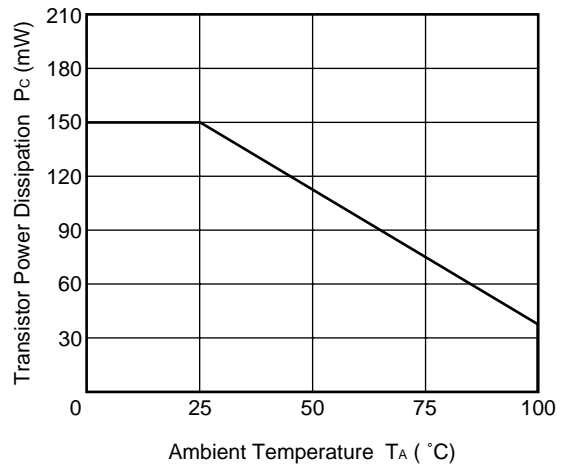


★ TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified)

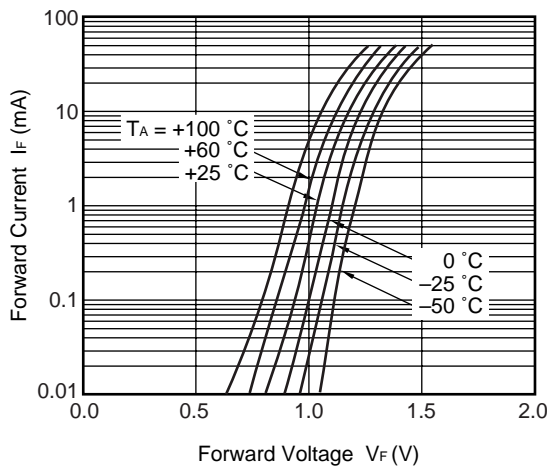
DIODE POWER DISSIPATION vs. AMBIENT TEMPERATURE



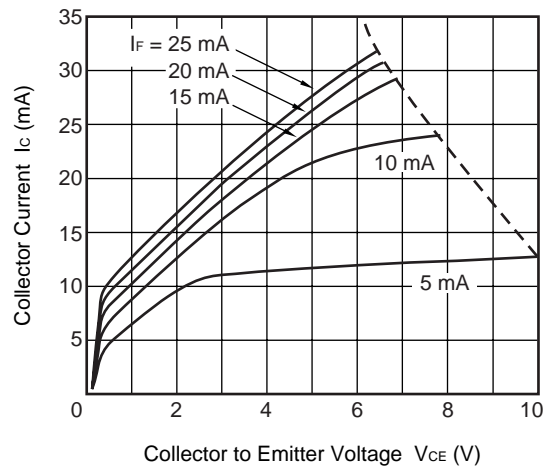
TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE



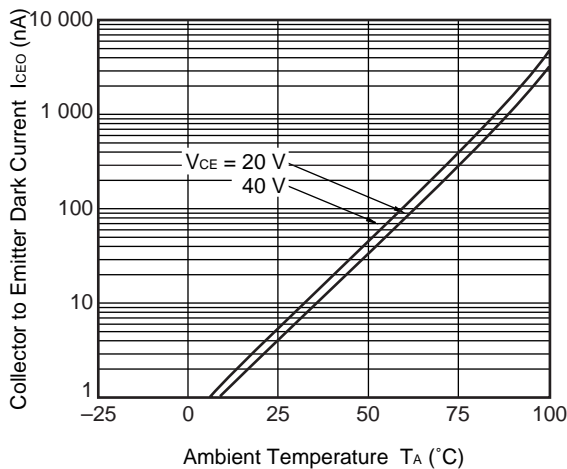
FORWARD CURRENT vs. FORWARD VOLTAGE



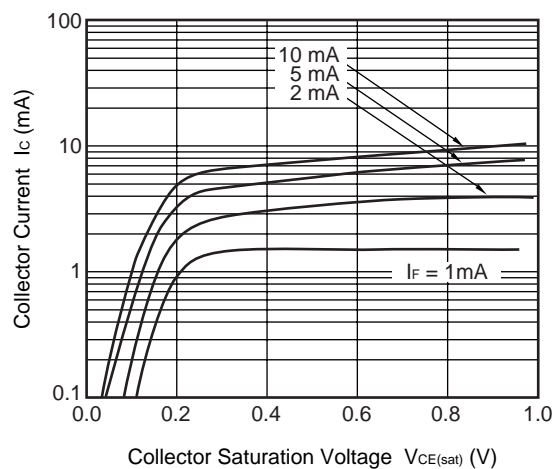
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



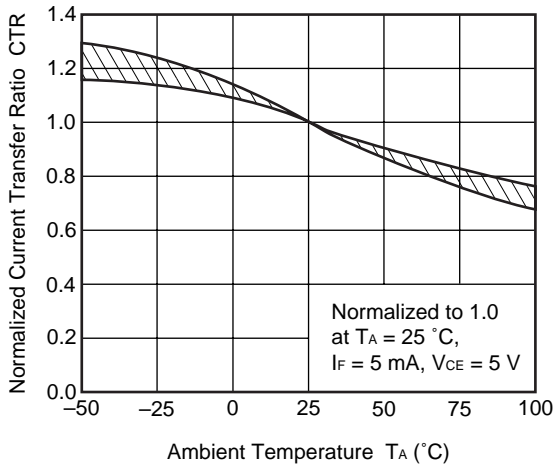
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



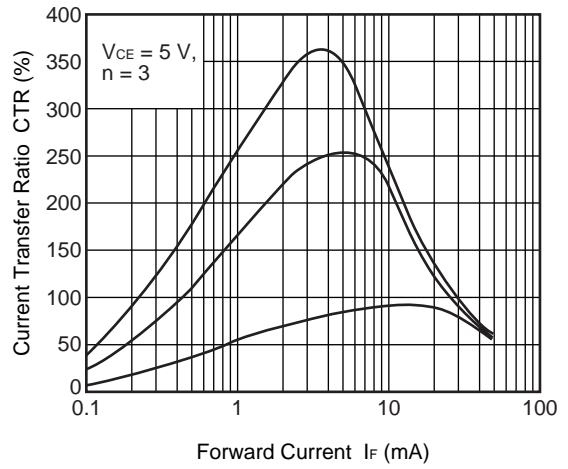
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



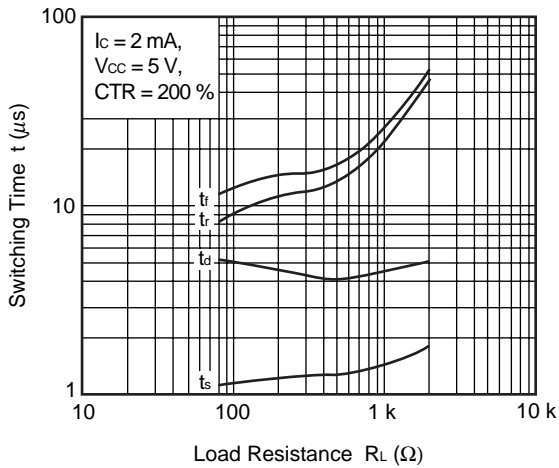
NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE



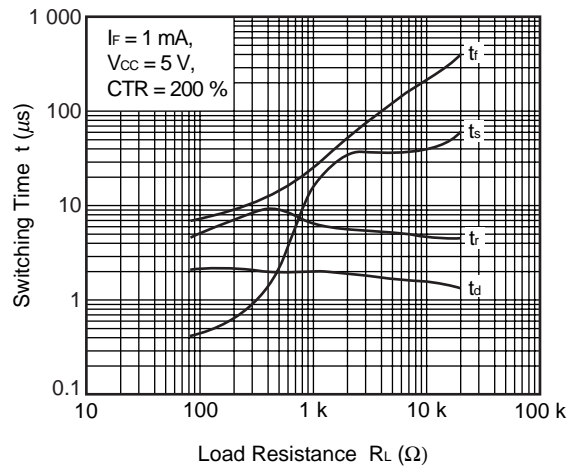
CURRENT TRANSFER RATIO vs. FORWARD CURRENT



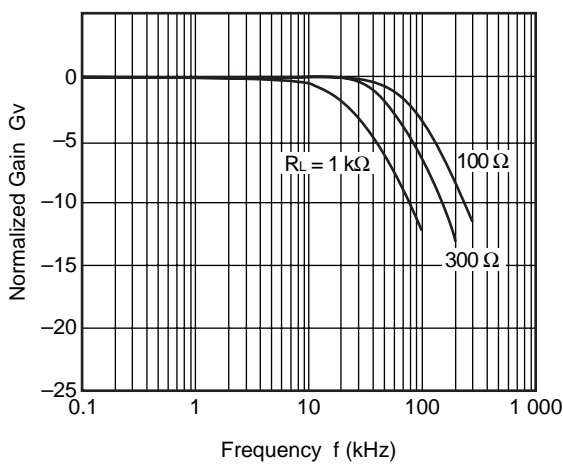
SWITCHING TIME vs. LOAD RESISTANCE



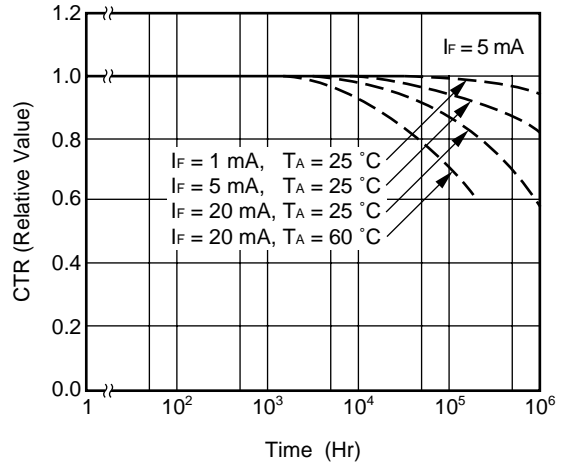
SWITCHING TIME vs. LOAD RESISTANCE



FREQUENCY RESPONSE



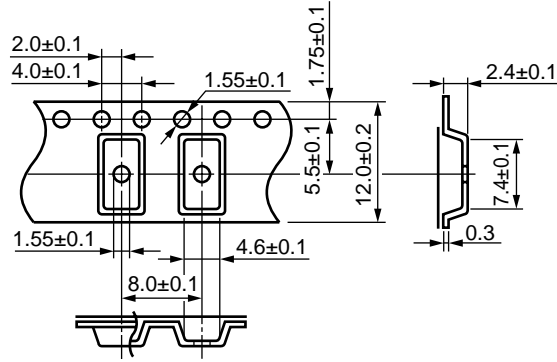
LONG TERM CTR DEGRADATION



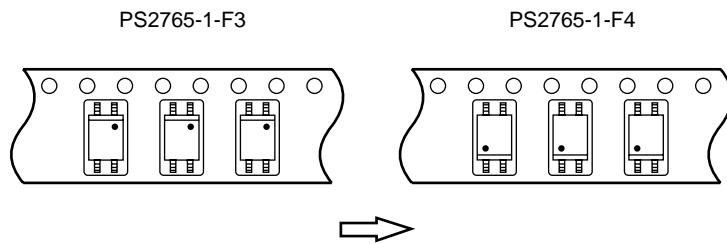
Remark The graphs indicate nominal characteristics.

★ TAPING SPECIFICATIONS (in millimeters)

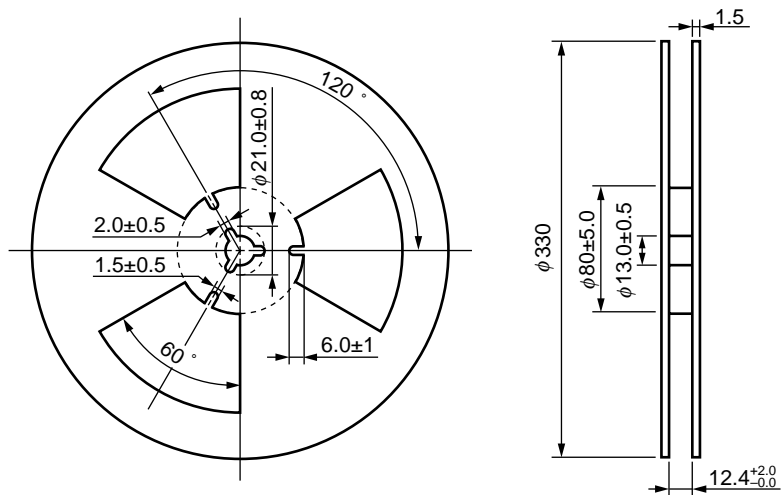
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



Packing: 3 500 pcs/reel

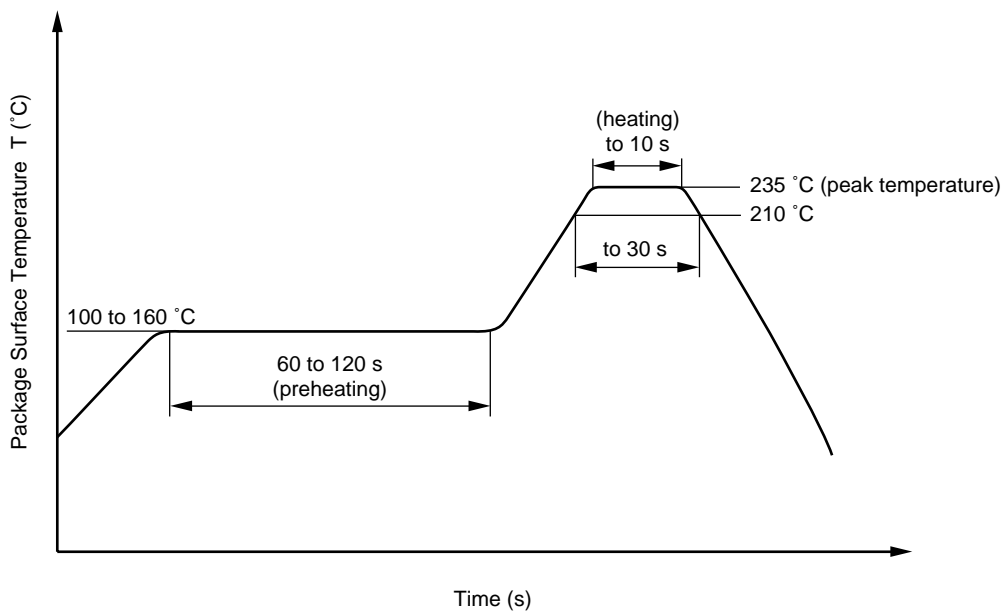
★ NOTES ON HANDLING

1. Recommended soldering conditions

(1) Infrared reflow soldering

- Peak reflow temperature 235 °C or below (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 (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.

2. Cautions regarding noise

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

[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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