

FEATURES

- **ISOLATION DISTANCE:**
0.4 mm MIN.
- **AC INPUT RESPONSE**
- **HIGH ISOLATION VOLTAGE:**
 $BV = 3.75 \text{ k } V_{r.m.s.}$
- **SOP (SMALL OUT-LINE PACKAGE)**
- **HIGH SPEED SWITCHING:**
 $t_r = 4 \mu\text{s TYP}$, $t_f = 5 \mu\text{s TYP}$
- **AVAILABLE ON TAPE AND REEL**

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 Out-line Package) for high density applications and has a shield effect to cut off ambient light.

APPLICATIONS

- **HYBRID IC**
- **PROGRAMMABLE LOGIC CONTROLLERS**
- **POWER SUPPLY**

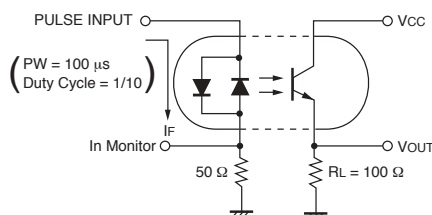
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

PART NUMBER				PS2765-1		
SYMBOLS		PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V _F	Forward Voltage, I _F = ±5 mA	V		1.1	1.4
	C _t	Terminal Capacitance, V = 0, f = 1 MHz	pF		30	
Transistor	I _{CEO}	Collector to Emitter Dark Current, V _{CE} = 40 V, I _F = 0 mA	nA			100
Coupled	CTR	Current Transfer Ratio (I _C /I _F) ¹ , I _F = ±5 mA, V _{CE} = 5 V	%	50	100	400
	V _{CE (sat)}	Collector Saturation Voltage, I _F = ±10 mA, I _C = 2 mA	V			0.3
	R _{I-O}	Isolation Resistance, V _{I-O} = 1 kV _{DC}	Ω	10 ¹¹		
	C _{I-O}	Isolation Capacitance, V = 0, f = 1 MHz	pF		0.4	
	t _r	Rise Time ² , V _{CC} = 5 V, I _C = 2 mA, R _L = 100 Ω	μs		4	
	t _f	Fall Time ² , V _{CC} = 5 V, I _C = 2 mA, R _L = 100 Ω	μs		5	

Notes:

1. CTR Rank
N: 50 to 400%

2. Test Circuit for Switching Time



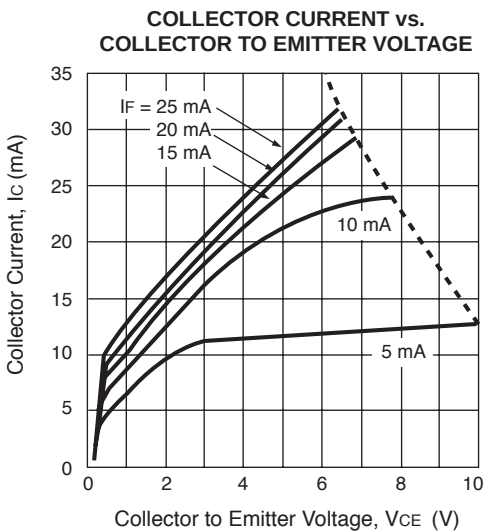
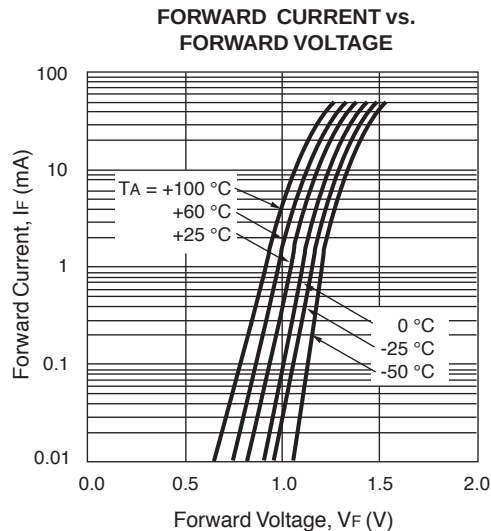
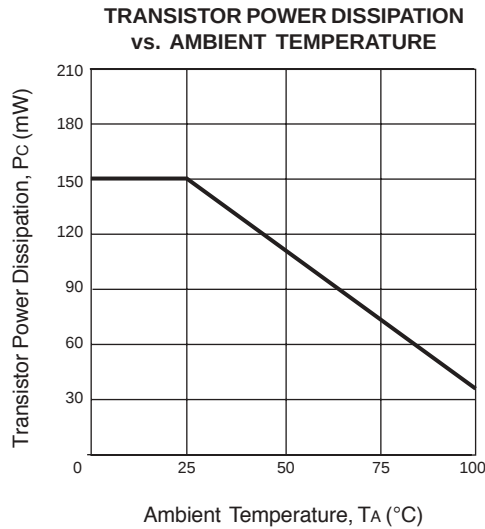
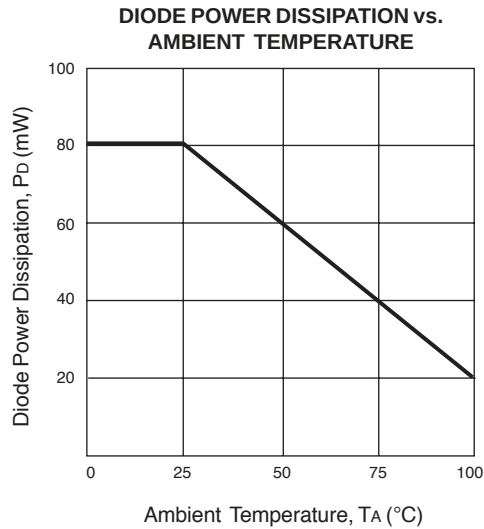
ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
			PS2765-1
Diode			
I _F	Forward Current (DC)	mA	±50
P _D	Power Dissipation	mW	80
I _F (PEAK)	Peak Forward Current ²	A	±1.0
Transistor			
V _{CEO}	Collector to Emitter Voltage	V	40
V _{ECO}	Emitter to Collector Voltage	V	5
I _C	Collector Current	mA	40
P _C	Power Dissipation	mW	150
ΔP _C /°C	Power Dissipation Derating	mW/°C	1.5
Coupled			
BV	Isolation Voltage ³	V _{r.m.s.}	3750
T _A	Operating Ambient Temp.	°C	-55 to +100
T _{STG}	Storage Temperature	°C	-55 to +150

Notes:

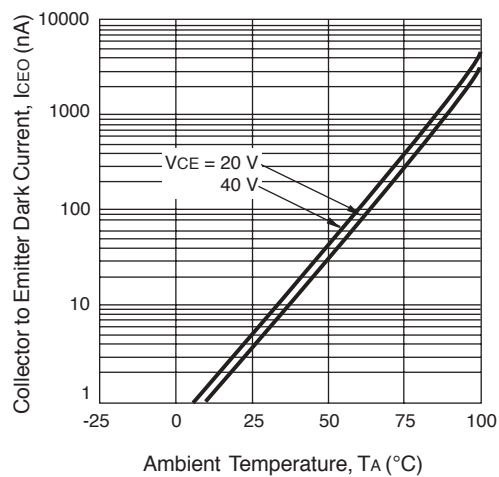
1. Operation in excess of any one of these parameters may result in permanent damage.
2. P_W = 100 μs, duty cycle = 1%.
3. AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.

TYPICAL PERFORMANCE CURVES (T_A = 25°C)

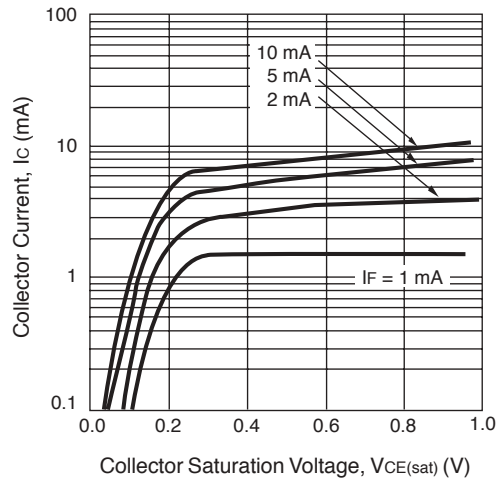


TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)

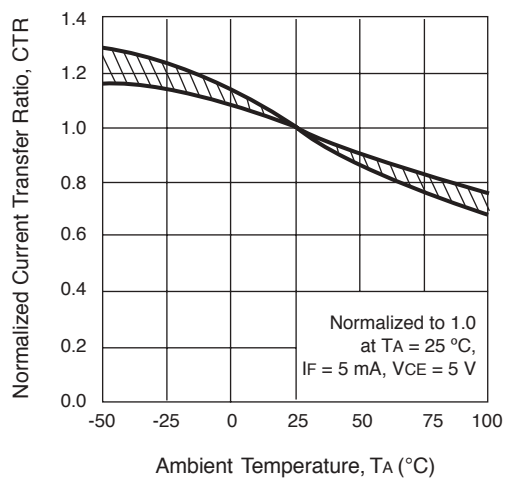
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



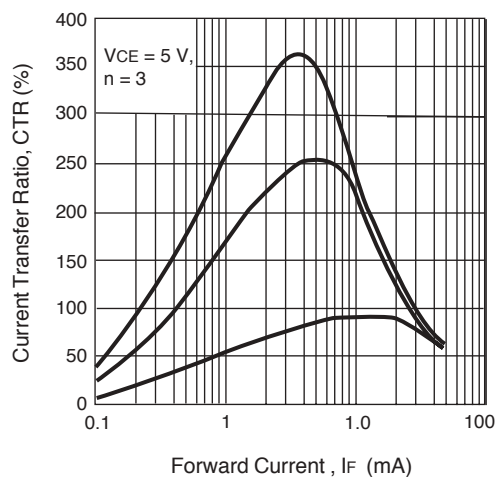
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



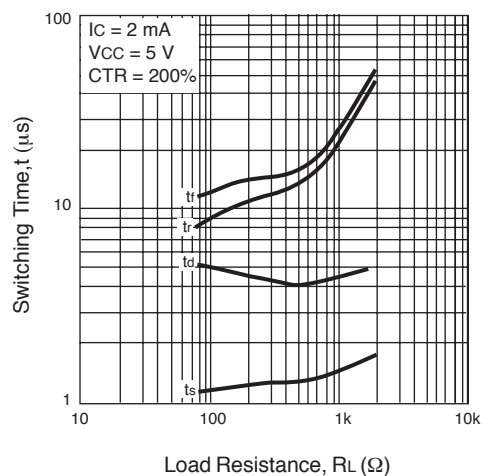
NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE



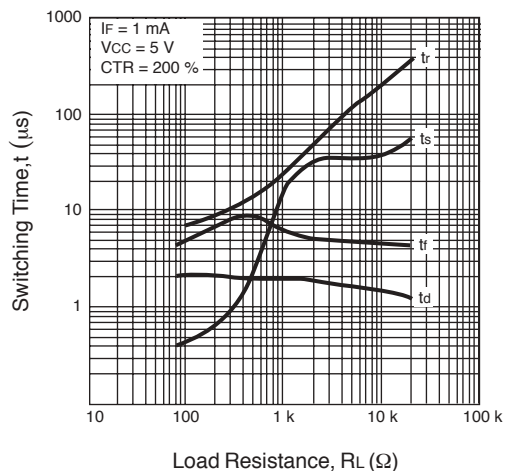
CURRENT TRANSFER RATIO vs. FORWARD CURRENT



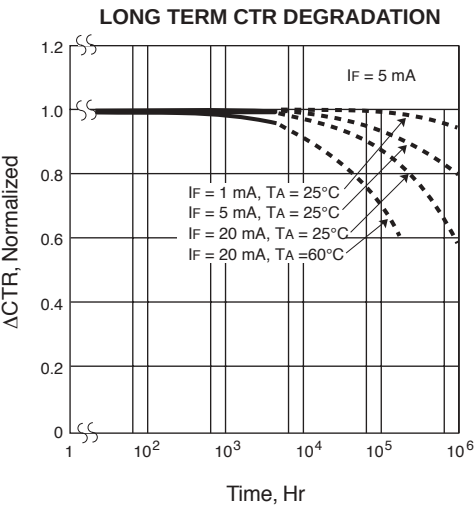
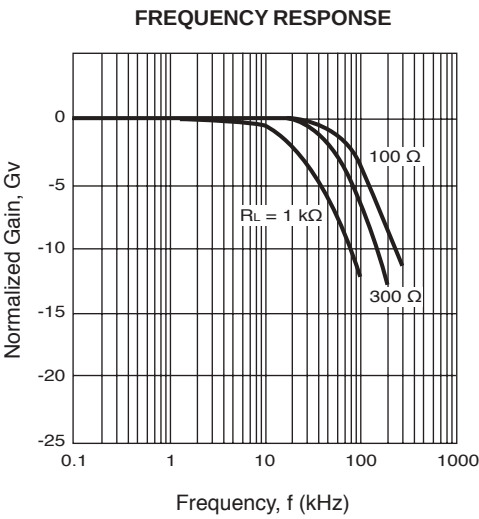
SWITCHING TIME vs. LOAD RESISTANCE



SWITCHING TIME vs. LOAD RESISTANCE



TYPICAL PERFORMANCE CURVES (TA = 25°C)

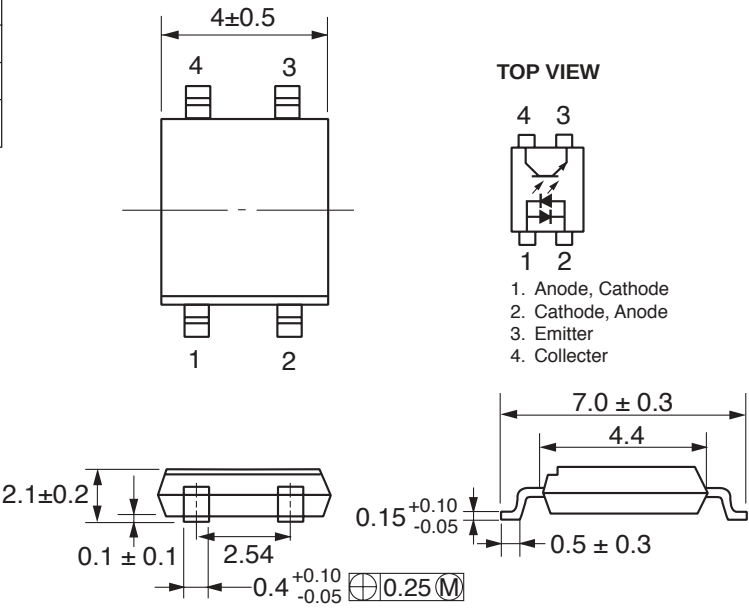


OUTLINE DIMENSIONS (Units in mm)

PHOTOCOUPLER CONSTRUCTION

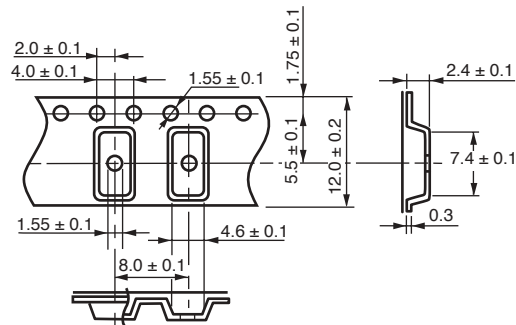
PARAMETER	UNIT (MIN)
Air Distance	5 mm
Creepage Distance	5 mm
Isolation Distance	0.4 mm

PS2765-1

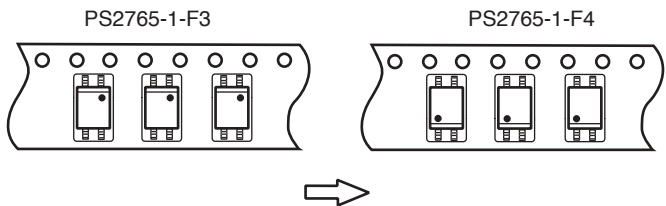


TAPING SPECIFICATIONS (Units in mm)

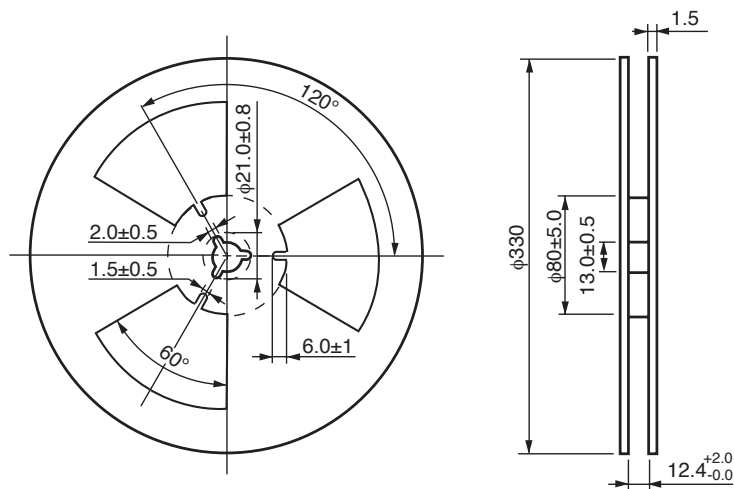
OUTLINE AND DIMENSIONS (TAPE)



TAPING DIRECTION



OUTLINE AND DIMENSIONS (REEL)

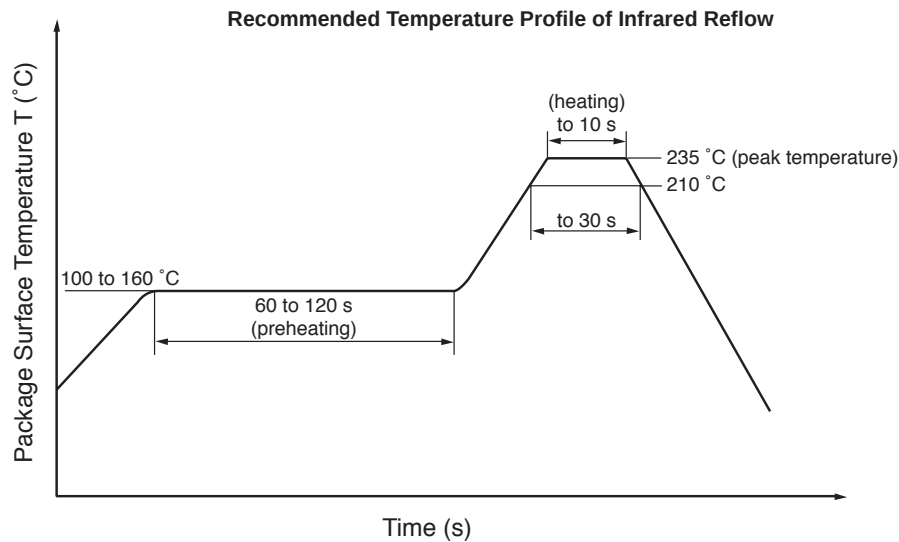


Packing: 3500 pcs/reel

1. 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).



(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.