

HIGH ISOLATION VOLTAGE AC INPUT RESPONSE TYPE SOP MULTI PHOTOCOUPLER

PS2705-1
PS2705-2
PS2705-4

FEATURES

- **HIGH ISOLATION VOLTAGE**
BV: 3.75 k V_{r.m.s.} MIN
- **SOP (SMALL OUT-LINE PACKAGE)**
- **ISOLATED CHANNELS PER EACH PACKAGE**
- **AC INPUT RESPONSE**
- **HIGH SPEED SWITCHING**
 $t_r = 3 \mu s$, $t_f = 5 \mu s$ TYP
- **LOW COLLECTOR TO EMITTER DARK CURRENT**
 I_{CEO} : 5 nA TYP @ $T_A = 25^\circ C$, $V_{CE} = 40 V$
- **TAPE AND REEL AVAILABLE**

DESCRIPTION

PS2705-1, -2 and -4 are optically coupled isolators containing GaAs light emitting diodes and an NPN silicon phototransistor. Each is mounted in a plastic SOP (Small Out-line Package) for high density applications. This package has a shield effect to cut off ambient light.

APPLICATIONS

Interface circuit for various instrumentations and control equipment.

- **AC LINE/DIGITAL LOGIC**
- **DIGITAL LOGIC INTERFACE**
- **TWISTED PAIR LINE RECEIVER**
- **TELEPHONE/TELEGRAPH LINE RECEIVER**
- **SEQUENCE CONTROLLERS**
- **SYSTEMS APPLICATIONS, MEASURING INSTRUMENTS**

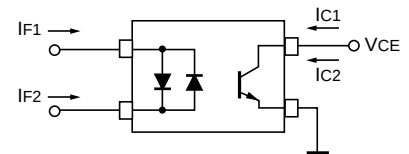
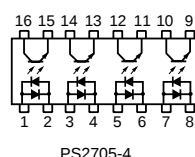
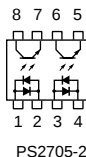
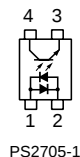
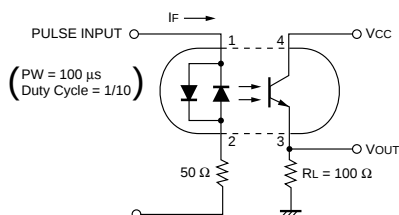
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ C$)

PART NUMBER			PS2705-1, -2, -4			
SYMBOLS		PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V _F	Forward Voltage, I _F = ± 5 mA	V		1.1	1.4
	C	Junction Capacitance, V= 0, f = 1.0 MHz	pF		60	
Transistor	I _{CEO}	Collector to Emitter Dark Current, V _{CE} = 40 V, I _F = 0	nA			100
Coupled	CTR	Current Transfer Ratio, I _F = ± 5 mA, V _{CE} = 5 V	%	50	100	300
	CTR ₁ /CTR ₂	CTR Ratio ² , I _F = ± 5 mA, V _{CE} = 5 V		0.3	0.1	3.0
	V _{CE} (sat)	Collector Saturation Voltage, I _F = ±10 mA, I _c = 2 mA	V			0.3
	R ₁₋₂	Isolation Resistance, V _{in-out} = 1.0 k V	Ω	10 ¹¹		
	C ₁₋₂	Isolation Capacitance, V = 0, f = 1.0 MHz	pF		0.4	
	t _r	Rise Time ¹ , V _{CC} = 5 V, I _c = 2 mA, R _L = 100 Ω	μs		3	
	t _f	Fall Time ¹ , V _{CC} = 5 V, I _c = 2 mA, R _L = 100 Ω	μs		5	

Notes:

1. Test Circuit for Switching Time

2. $CTR_1 = I_{C1}/I_{F1}$, $CTR_2 = I_{C2}/I_{F2}$

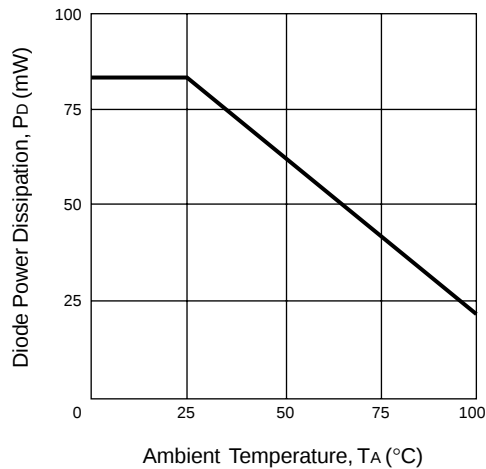
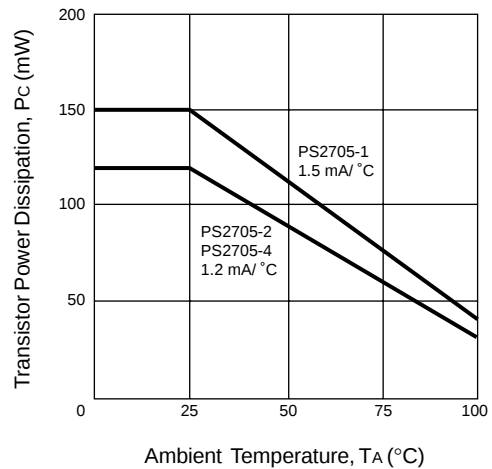
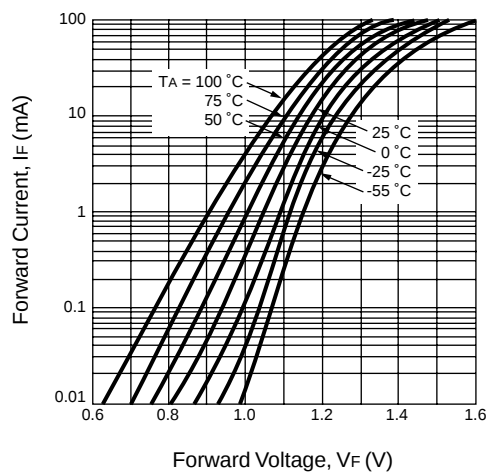
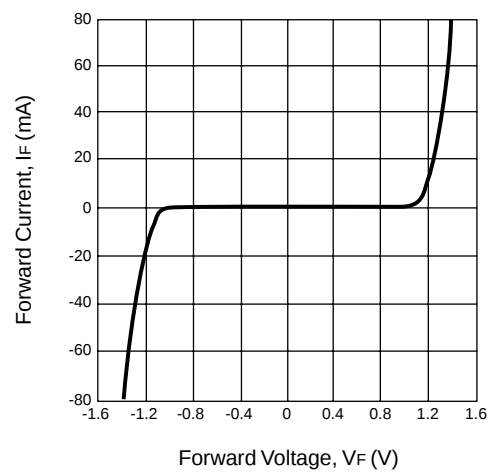


ABSOLUTE MAXIMUM RATINGS¹ ($T_A = 25^\circ\text{C}$)

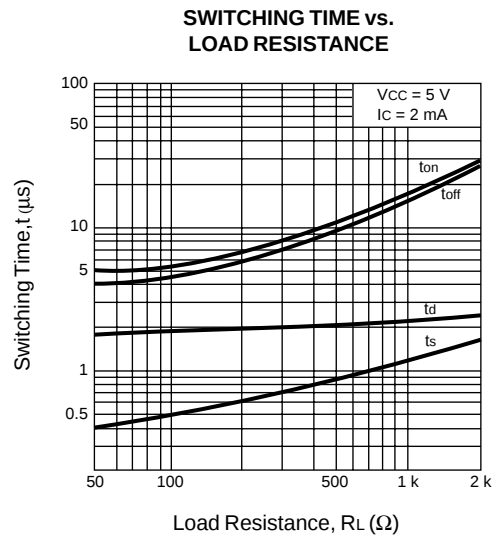
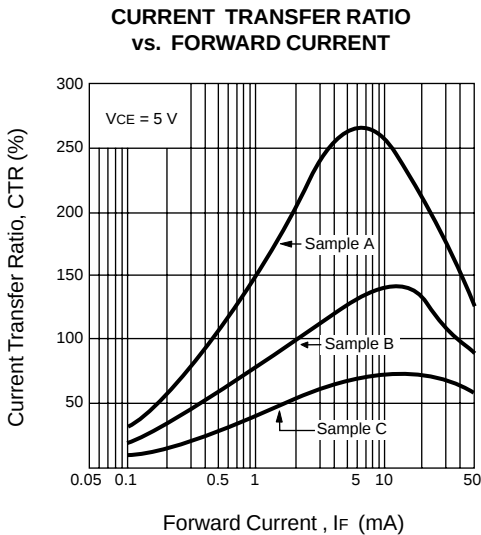
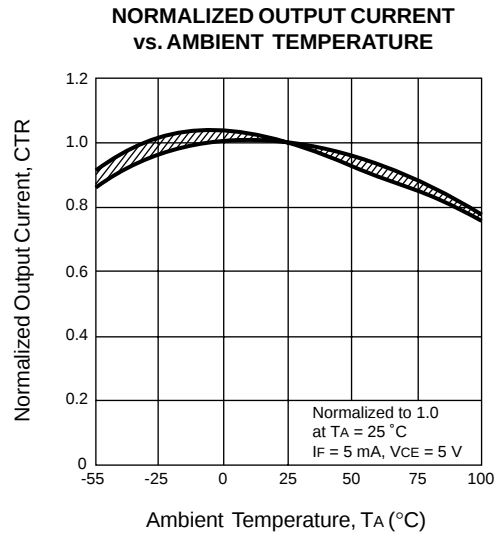
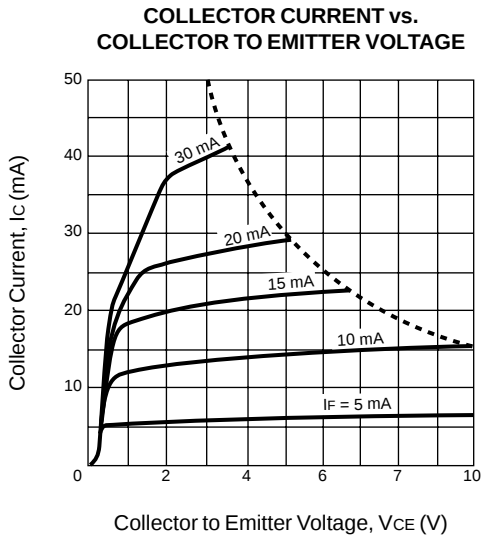
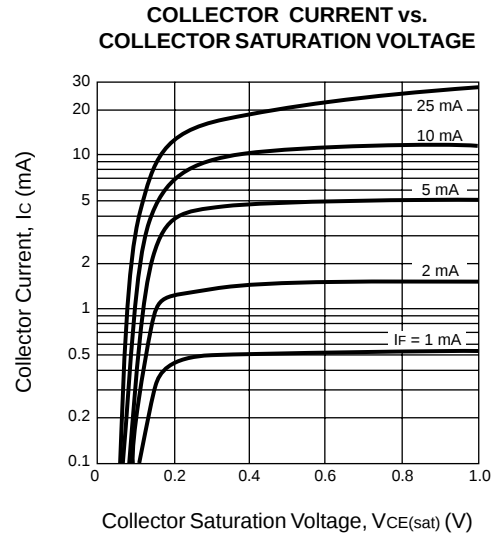
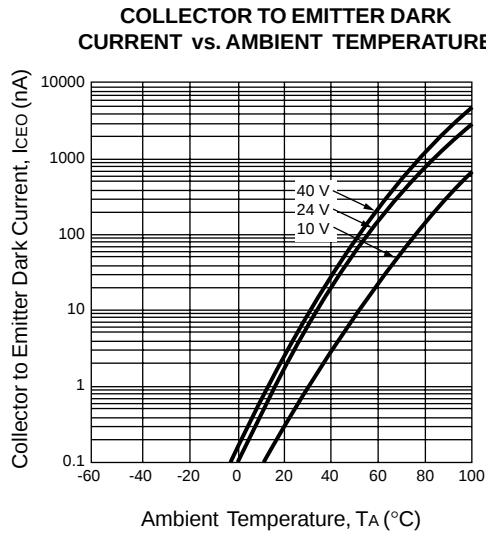
SYMBOLS	PARAMETERS	UNITS	RATINGS	
			PS2705-1	PS2705-2,-4
Diode				
I _F	Forward Current	mA	±50	±50
P _D	Power Dissipation	mW/Ch	80	80
I _F (PEAK)	Peak Forward Current (PW = 100 μs, Duty Cycle 1%)	A	±1	±1
Transistor				
V _{CEO}	Collector to Emitter Voltage (I _C = I _{mA} , I _B = 0)	V	40	40
V _{ECO}	Emitter to Collector Voltage (I _E = 100μA, I _B = 0)	V	6	6
I _C	Collector Current	mA/Ch	80	80
P _C	Power Dissipation	mW/Ch	150	120
Coupled				
BV	Isolation Voltage ²	V _{r.m.s.}	3750	3750
T _{STG}	Storage Temperature	°C	-55 to +150	-55 to +150
T _{OP}	Operating Temperature	°C	-55 to +100	-55 to +100

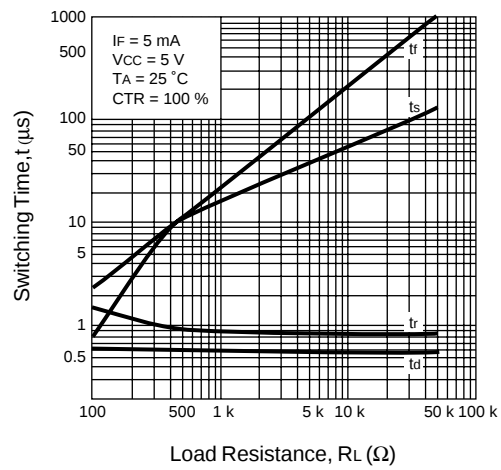
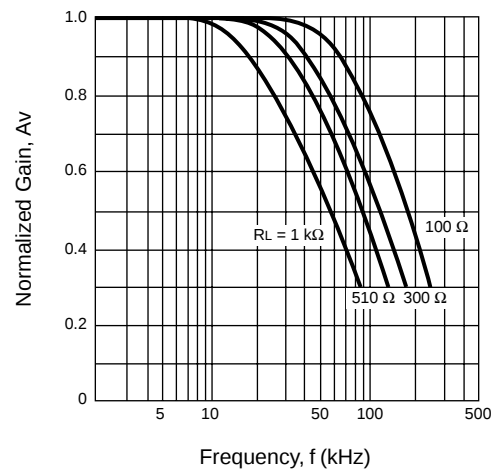
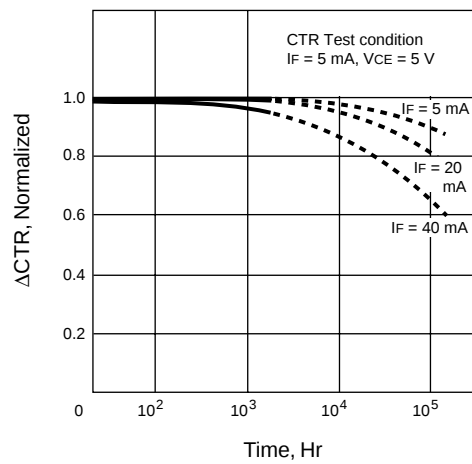
Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. AC voltage for 1 minute at $T_A = 25^\circ\text{C}$, $RH = 60\%$ between input and output.

TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)**DIODE POWER DISSIPATION vs.
AMBIENT TEMPERATURE****TRANSISTOR POWER DISSIPATION
vs. AMBIENT TEMPERATURE****FORWARD CURRENT vs.
FORWARD VOLTAGE****FORWARD CURRENT vs.
FORWARD VOLTAGE**

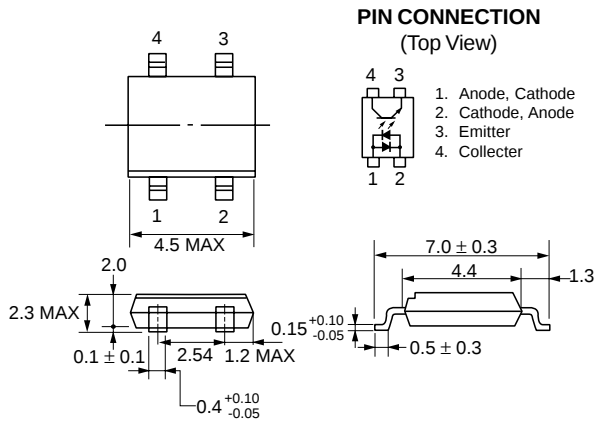
TYPICAL PERFORMANCE CURVES (T_A = 25°C)



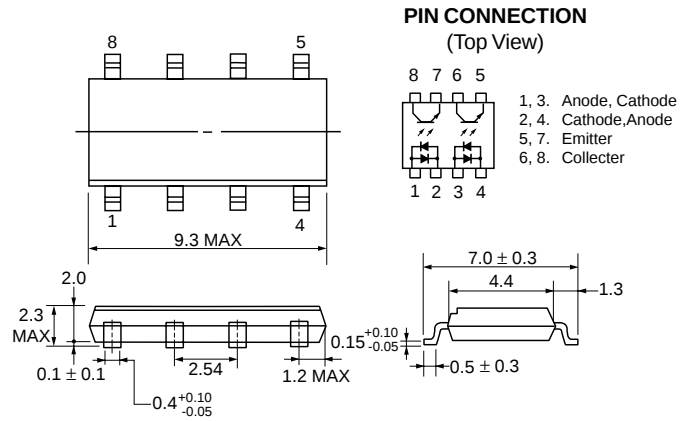
TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)**SWITCHING TIME vs.
LOAD RESISTANCE****FREQUENCY RESPONSE****CTR DEGRADATION**

OUTLINE DIMENSIONS (Units in mm)

PS2705-1



PS2705-2



PS2705-4

