

### FEATURES

- **HIGH ISOLATION VOLTAGE**  
BV: 3.75 k Vr.m.s. MIN
- **SOP (SMALL OUT-LINE PACKAGE)**
- **ISOLATED CHANNELS PER EACH PACKAGE**
- **AC INPUT RESPONSE**
- **HIGH COLLECTOR TO EMITTER VOLTAGE**  
VCEO: 120 V MIN
- **HIGH SPEED SWITCHING**  
tr, tf = 10 μs TYP
- **TAPING PRODUCT NUMBER (ONLY -1 TYPE)**  
PS2707-1-E3, F3

### DESCRIPTION

The PS2707-1,-2 and -4 are optically coupled isolators containing a GaAs light emitting diode and a 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.

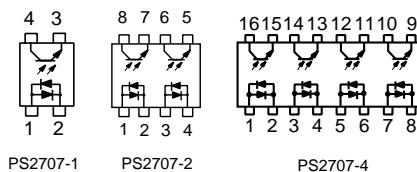
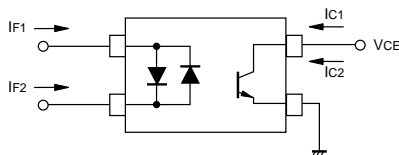
- **AC LINE/DIGITAL LOGIC**
- **DIGITAL LOGIC INTERFACE**
- **TWISTED PAIR LINE RECEIVER**
- **TELEPHONE/TELEGRAPH LINE RECEIVER**
- **SEQUENCE CONTROLLERS**
- **SYSTEMS APPLICATIONS, MEASURING INSTRUMENTS**

### ELECTRICAL CHARACTERISTICS (TA = 25°C)

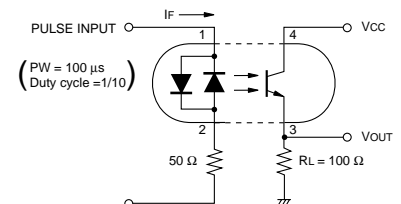
		PART NUMBER	PS2707-1, -2, -4			
	SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V <sub>F</sub>	Forward Voltage, I <sub>F</sub> = ±5 mA	V		1.1	1.4
	C	Junction Capacitance, V = 0, f = 1.0 MHz	pF		30	
Transistor	I <sub>CEO</sub>	Collector to Emitter Dark Current, V <sub>CE</sub> = 40 V, I <sub>F</sub> = 0	nA			100
Coupled	CTR	Current Transfer Ratio, I <sub>F</sub> = ±5 mA, V <sub>CE</sub> = 5 V	%	50	150	400
		I <sub>F</sub> = ±1 mA, V <sub>CE</sub> = 5 V	%	10	80	
	CTR <sub>1</sub> /CTR <sub>2</sub>	CTR Ratio <sup>1</sup> , I <sub>F</sub> = ±5 mA, V <sub>CE</sub> = 5 V		0.3	1.0	3.0
	V <sub>CE(sat)</sub>	Collector Saturation Voltage, I <sub>F</sub> = ±10 mA, I <sub>C</sub> = 2 mA	V			0.3
	R <sub>1-2</sub>	Isolation Resistance, V <sub>in-out</sub> = 1.0 k Vdc	Ω	10 <sup>11</sup>		
	C <sub>1-2</sub>	Isolation Capacitance, V = 0, f = 1.0 MHz	pF		0.4	
	t <sub>r</sub>	Rise Time <sup>2</sup> , V <sub>CC</sub> = 5 V, I <sub>C</sub> = 2 mA, R <sub>L</sub> = 100 kΩ	μs		10	
t <sub>f</sub>	Fall Time <sup>2</sup> , V <sub>CC</sub> = 5 V, I <sub>C</sub> = 2 mA, R <sub>L</sub> = 100 kΩ	μs		10		

#### Notes:

1.  $CTR_1 = \frac{I_{C1}}{I_{F1}}$   $CTR_2 = \frac{I_{C2}}{I_{F2}}$



#### 2. Test Circuit for Switching Time



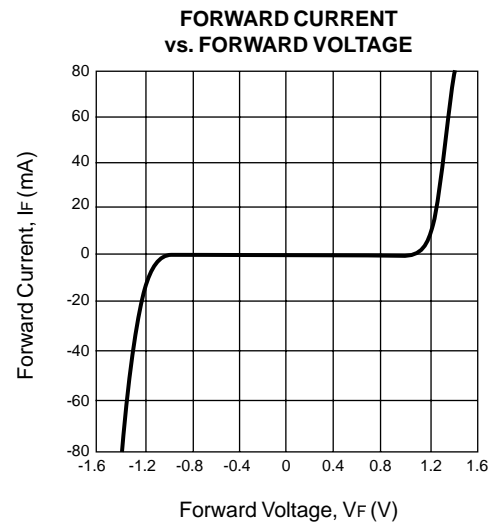
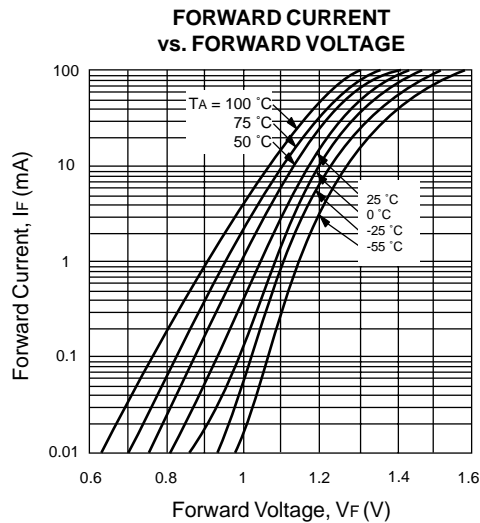
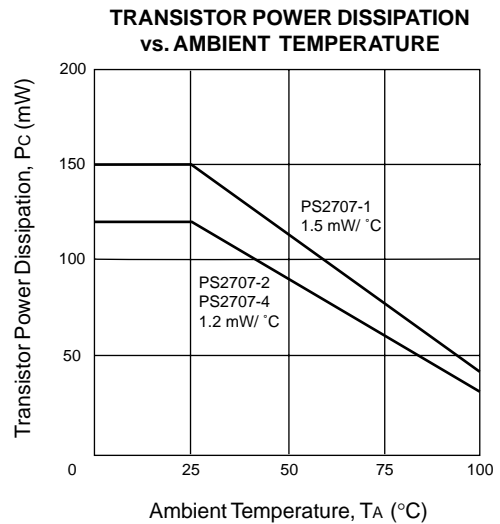
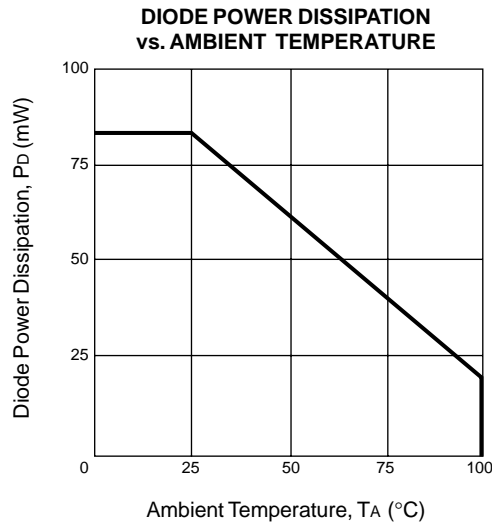
**ABSOLUTE MAXIMUM RATINGS<sup>1</sup>** (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS	
Diode			PS2707-1	PS2707-2,-4
I <sub>F</sub>	Forward Current (DC)	mA	±50	±50
P <sub>D</sub>	Power Dissipation	mW/Ch	80	80
I <sub>F(PEAK)</sub>	Peak Forward Current PW = 100 μs, Duty Cycle 1%	A	±1	±1
Transistor				
V <sub>CEO</sub>	Collector to Emitter Voltage (I <sub>c</sub> = 1mA, I <sub>B</sub> = 0)	V	120	120
V <sub>ECO</sub>	Emitter to Collector Voltage (I <sub>E</sub> = 100μA, I <sub>B</sub> = 0)	V	6	6
I <sub>c</sub>	Collector Current	mA/Ch	30	30
P <sub>c</sub>	Power Dissipation	mW/Ch	150	120
Coupled				
BV	Isolation Voltage <sup>2</sup>	V <sub>r.m.s.</sub>	3750	3750
T <sub>STG</sub>	Storage Temperature	°C	-55 to +150	-55 to +150
T <sub>OP</sub>	Operating Temperature	°C	-50 to +100	-55 to +100

Notes:

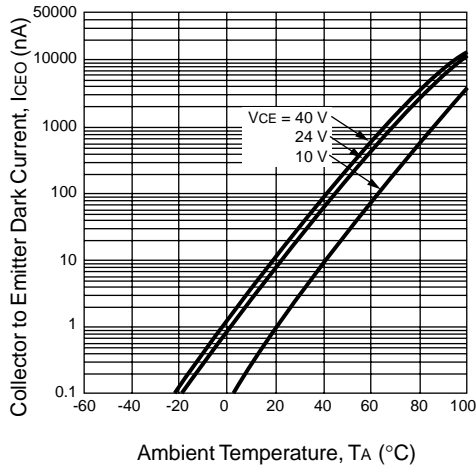
1. Operation in excess of any one of these parameters may result in permanent damage.
2. AC voltage for 1 minute at T<sub>A</sub> = 25 °C, RH = 60 % between input and output.

**TYPICAL PERFORMANCE CURVES** (T<sub>A</sub> = 25 °C)

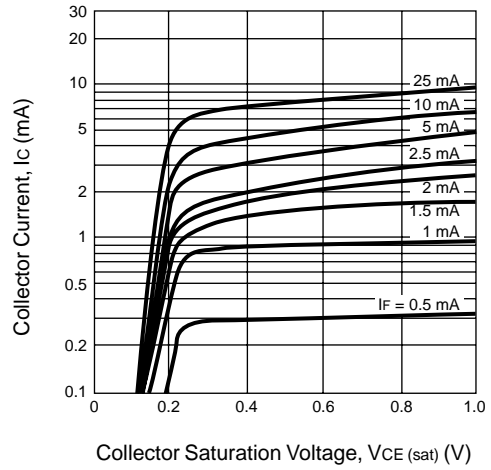


TYPICAL PERFORMANCE CURVES (TA = 25 °C)

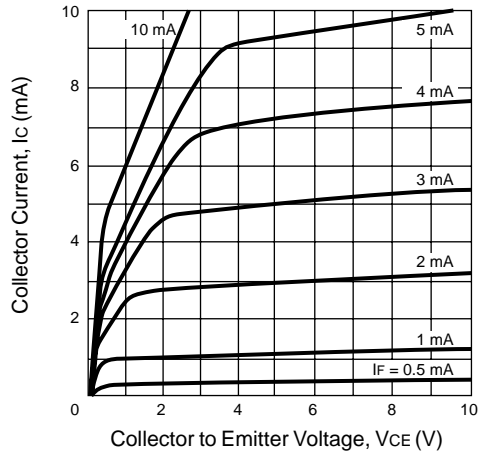
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



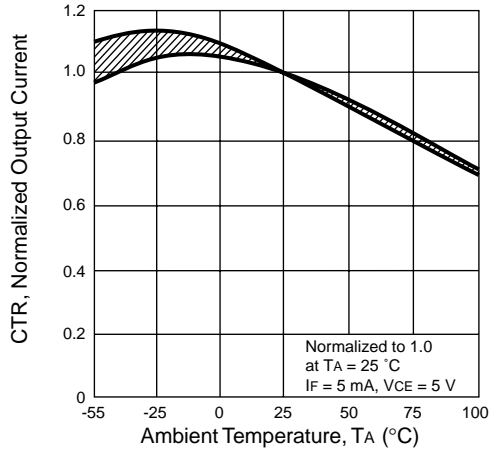
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



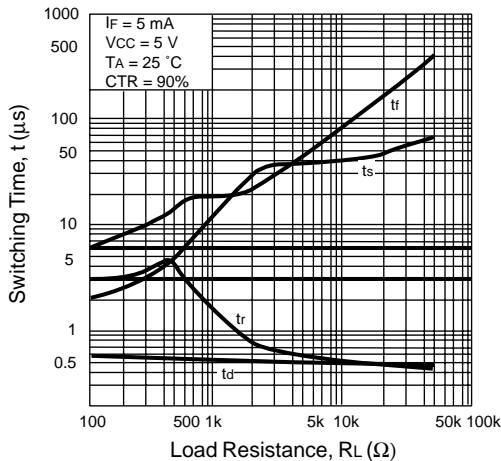
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



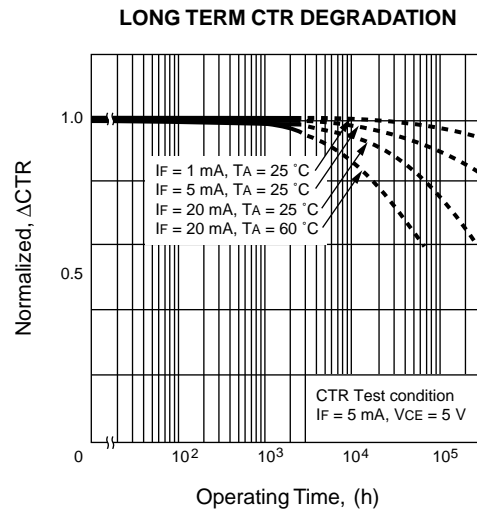
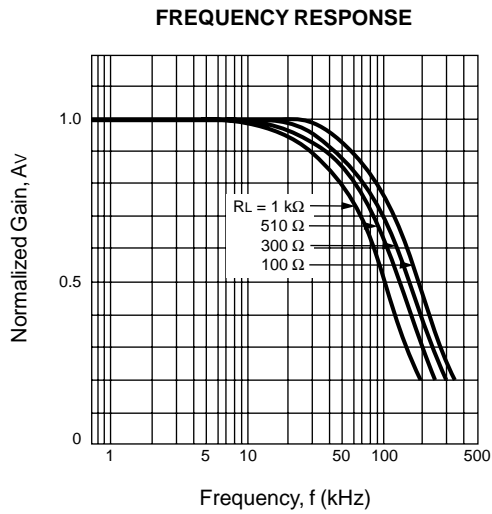
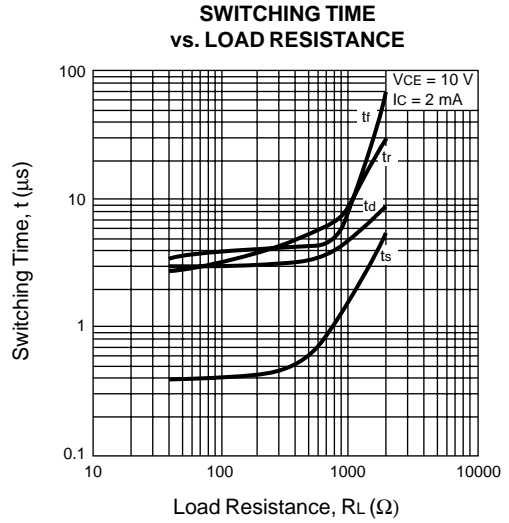
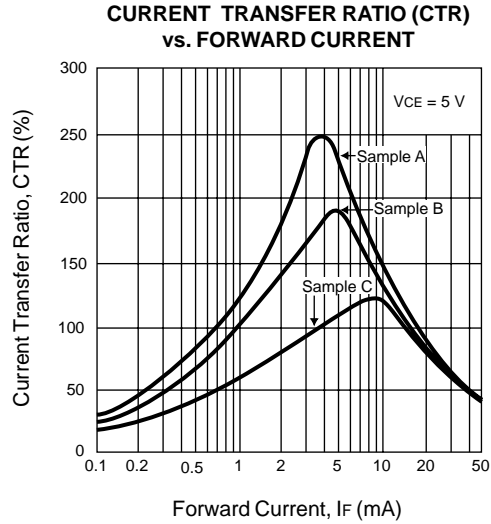
NORMALIZED OUTPUT CURRENT vs. AMBIENT TEMPERATURE



SWITCHING TIME vs. LOAD RESISTANCE



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



# PS2707-1, PS2707-2, PS2707-4

## OUTLINE DIMENSIONS (Units in mm)

