

FEATURES

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

DESCRIPTION

PS2701-1 is an optically coupled isolator containing a GaAs light emitting diode and a NPN silicon phototransistor. This device is mounted in a plastic SOP (Small Outline Package) for high density applications and 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**
- **HIGH FREQUENCY POWER SUPPLY FEEDBACK CONTROL**
- **RELAY CONTACT MONITOR**
- **POWER SUPPLY MONITOR**

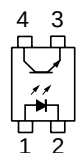
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ \text{C}$)

PART NUMBER			PS2701-1			
SYMBOLS		PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V _F	Forward Voltage, I _F = 5 mA	V		1.1	1.4
	I _R	Reverse Current, V _R = 5 V	μA			5
	C _t	Terminal Capacitance, V = 0, f = 1.0 MHz	pF		30	
Transistor	I _{CEO}	Collector to Emitter Dark Current, V _{CE} = 40 V, I _F = 0	nA			100
Coupled	CTR	Current Transfer Ratio ¹ , I _F = 5 mA, V _{CE} = 5 V	%	50	100	300
	V _{CE} (sat)	Collector Saturation Voltage, I _F = 10 mA, I _C = 2 mA	V			0.3
	R _{I-O}	Isolation Resistance, V _{IN-OUT} = 1.0 k V _{DC}	Ω	10 ¹¹		
	C _{I-O}	Isolation Capacitance, V = 0, f = 1.0 MHz	pF		0.4	
	t _r	Rise Time ² , V _{CC} = 5 V, I _C = 2 mA, R _L = 100 Ω	μs		3	
	t _f	Fall Time ² , V _{CC} = 5 V, I _C = 2 mA, R _L = 100 Ω	μs		5	

Notes:

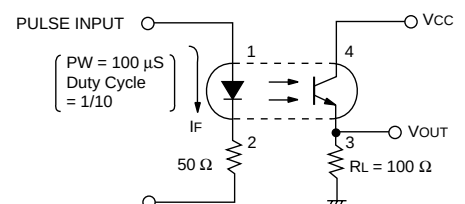
1. CTR rank

L: 100 to 300 %
M: 50 to 150 %
P: 150 to 300%



PS2701-1

2. Test Circuit for Switching Time

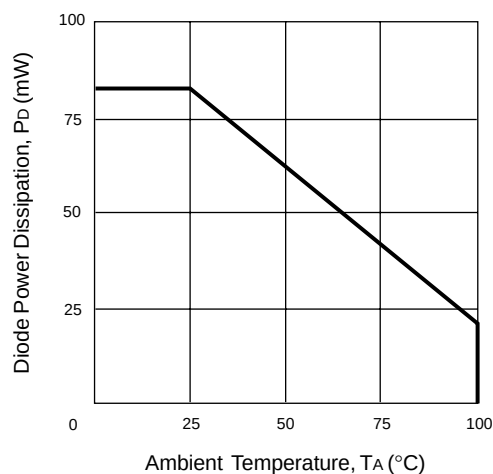
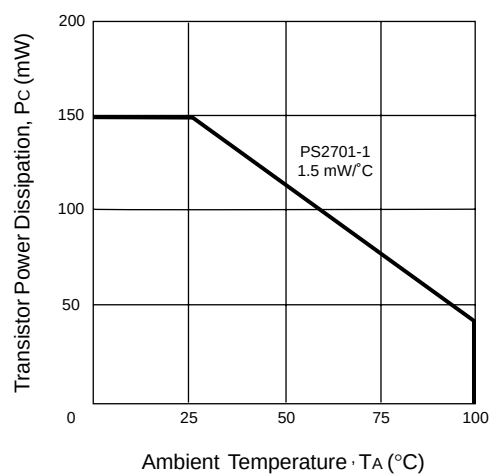
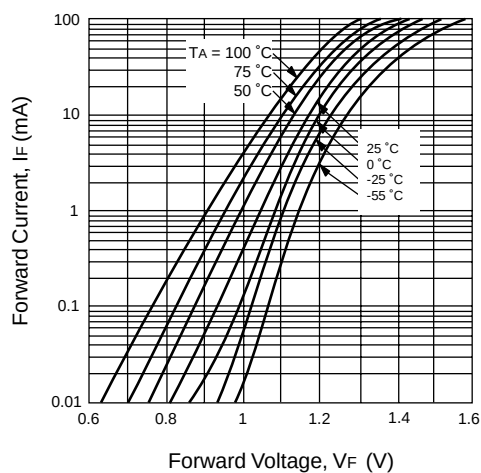
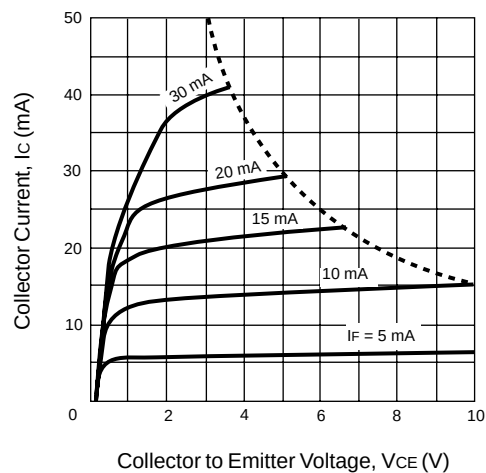


ABSOLUTE MAXIMUM RATINGS¹ ($T_A = 25^\circ\text{C}$)

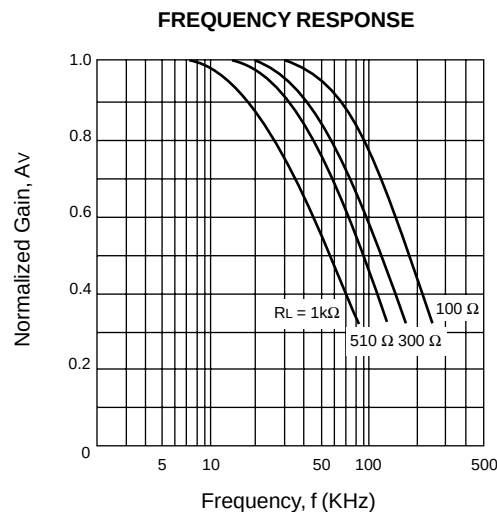
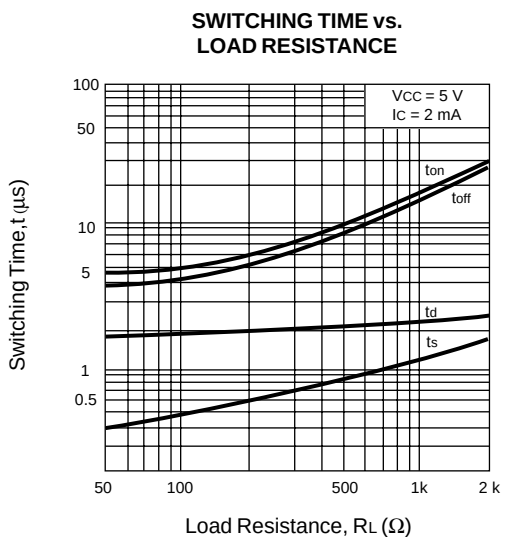
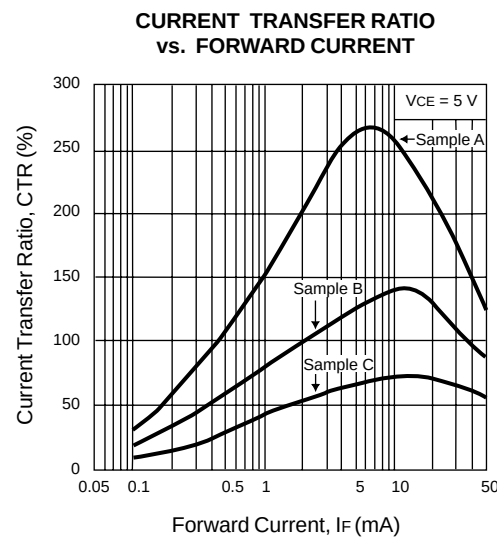
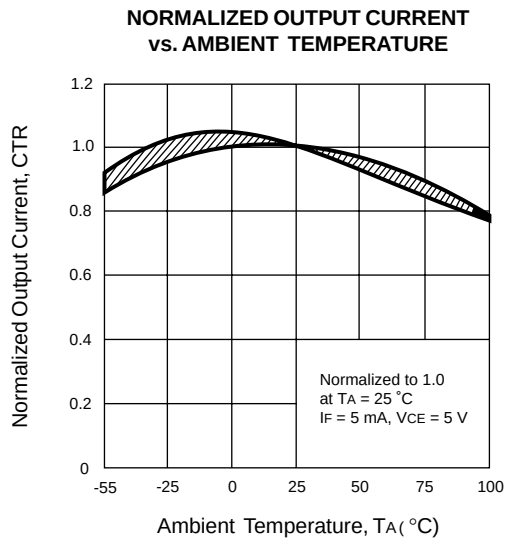
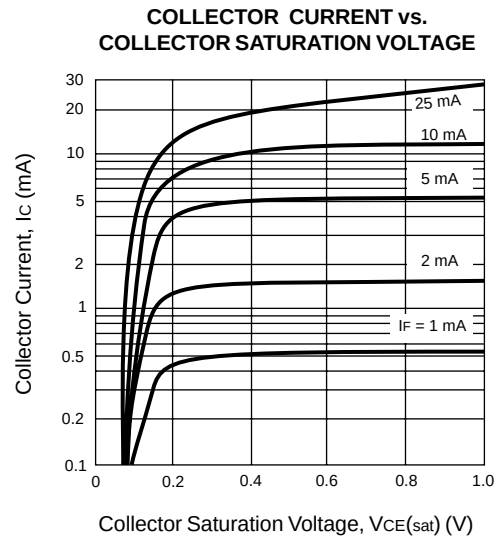
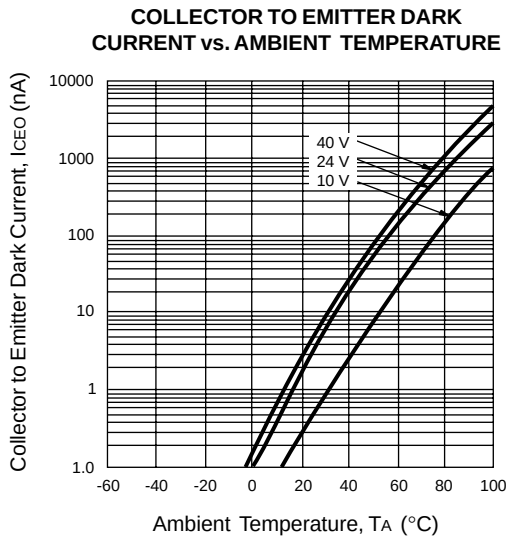
SYMBOLS	PARAMETERS	UNITS	RATINGS PS2701-1
Diode			
I_F	Forward Current (DC)	mA	50
V_R	Reverse Voltage	V	6
P_D	Power Dissipation	mW/Ch	80
I_F (PEAK)	Peak Forward Current ($PW = 100\ \mu\text{s}$, Duty Cycle 1%)	A	1
Transistor			
V_{CEO}	Collector to Emitter Voltage ($I_C = 1\text{mA}$, $I_B = 0$)	V	40
V_{ECO}	Emitter to Collector Voltage ($I_E = 100\ \mu\text{A}$, $I_B = 0$)	V	6
I_C	Collector Current	mA/Ch	80
P_C	Power Dissipation	mW/Ch	150
Coupled			
BV	Isolation Voltage ²	$V_{r.m.s.}$	3750
T_{STG}	Storage Temperature	$^\circ\text{C}$	-55 to +150
T_A	Operating Ambient Temperature	$^\circ\text{C}$	-55 to +100

Notes:

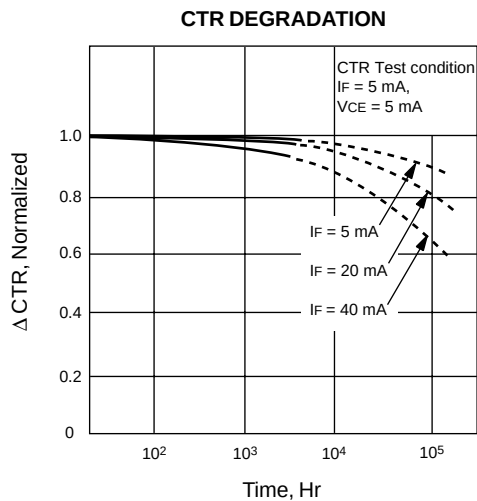
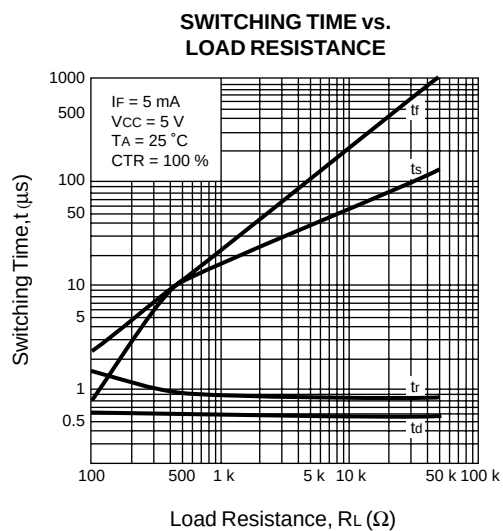
- Operation in excess of any one of these parameters may result in permanent damage.
- AC voltage for 1 minute at $T_A = 25^\circ\text{C}$, $RH = 60\%$ between input and output.

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****COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE**

TYPICAL PERFORMANCE CURVES (T_A = 25 °C)



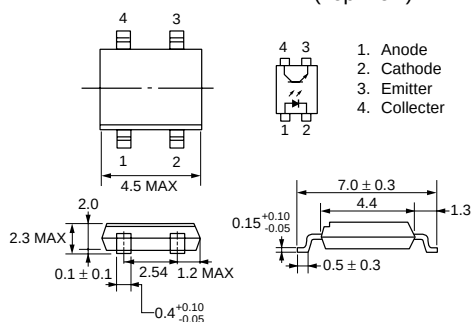
TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)



OUTLINE DIMENSIONS (Units in mm)

PS2701-1

PIN CONNECTION (Top View)



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