

NEC

HIGH ISOLATION VOLTAGE AC INPUT DARLINGTON TRANSISTOR TYPE SOP OPTOCOUPLER

PS2806-1
PS2806-4

FEATURES

- **HIGH ISOLATION VOLTAGE**
BV: 2.5 k V_{r.m.s.} MIN
- **SOP (SMALL OUT-LINE PACKAGE)**
Lead pin pitch is 1.27 mm
- **HIGH CURRENT TRANSFER RATIO**
CTR = 2000% TYP @ I_F = ±1 mA, V_{CE} = 2 V
- **AC INPUT RESPONSE**
- **TAPING PRODUCT NUMBER**
PS2806-1-F3, PS2806-4-F3

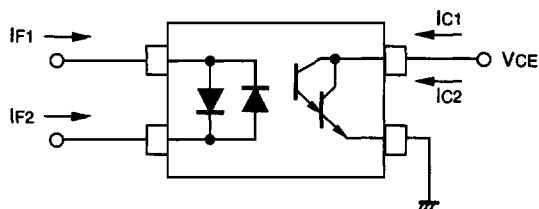
DESCRIPTION

PS2806-1 and PS2806-4 are optically coupled isolators containing a GaAs light emitting diode and an NPN silicon Darlington-connected phototransistor in a plastic SOP (Small Out-Line Package) for high density applications. Lead pin pitch is 1.27 mm.

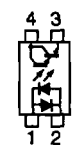
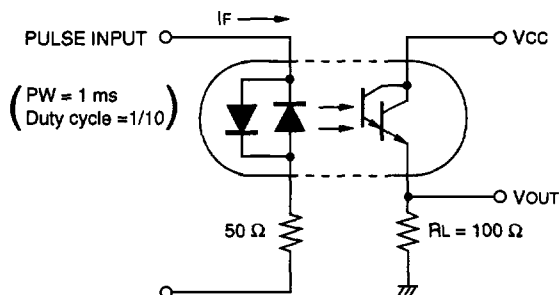
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER			PS2806-1, PS2806-4		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V _F	Forward Voltage, I _F = ±5 mA		1.1	1.4
	C _i	Junction Capacitance, V = 0, f = 1 MHz		40	
Transistor	I _{CEO}	Collector to Emitter Dark Current V _{CE} = 40 V, I _F = 0			400
Coupled	V _{CE(sat)}	Collector to Saturation Voltage, I _F = ±1 mA, I _C = 2 mA			1.0
	CTR	Current Transfer Ratio, I _F = ±1 mA, V _{CE} = 2 V	200	2000	
	CTR ₁ /CTR ₂	CTR Ratio ¹ , I _F = ±1 mA, V _{CE} = 2 V	0.3	1.0	3.0
	R ₁₋₂	Isolation Resistance, V _{in-out} = 1.0 k V _{DC}	10 ¹¹		
	C ₁₋₂	Isolation Capacitance, V = 0, f = 1 MHz		0.4	
	t _r	Rise Time ² , V _{CC} = 5 V, I _C = 2 mA, R _L = 100 Ω		200	
	t _f	Fall Time ² , V _{CC} = 5 V, I _C = 2 mA, R _L = 100 Ω		200	

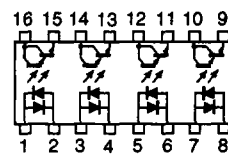
1. $CTR_1 = \frac{I_{C1}}{I_{F1}}$, $CTR_2 = \frac{I_{C2}}{I_{F2}}$



2. Test Circuit for Switching Time



PS2806-1



PS2806-4

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

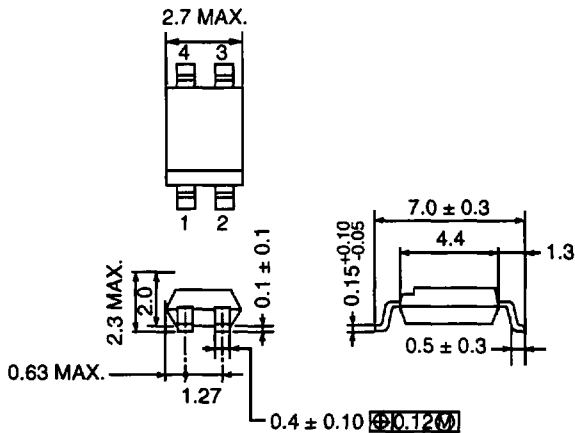
SYMBOLS		PARAMETERS	UNITS	RATINGS	
Diode				PS2806-1	PS2806-4
IF	Forward Current	mA	±50	±50	
ΔPd/°C	Power Dissipation Derating	mW/°C	0.6	0.8	
Pd	Power Dissipation	mW/Ch	60	80	
IF(Peak)	Forward Current PW = 100 μs, Duty Cycle 1%	A	±1	±1	
Transistor					
VCEO	Collector to Emitter Voltage	V	40	40	
VECO	Emitter to Collector Voltage	V	6	6	
IC	Collector Current	mA/Ch	90	100	
ΔPc/°C	Power Dissipation Derating	mW/°C	1.2	1.2	
Pc	Power Dissipation	mW/Ch	120	120	
Coupled					
BV	Isolation Voltage²	V _{r.m.s.}	2500		
TOP	Operating Temperature	°C	-55 to +100		
TSTG	Storage Temperature	°C	-55 to +150		

Notes:

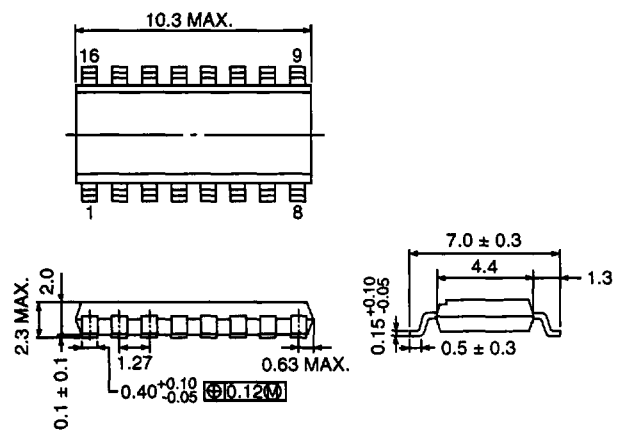
- Operation in excess of any one of these parameters may result in permanent damage.
- AC voltage for 1 minute at $T_A = 25^\circ\text{C}$, RH = 60 % between input and output.

OUTLINE DIMENSIONS (Units in mm)

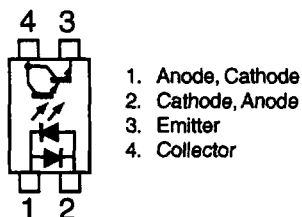
PS2806-1



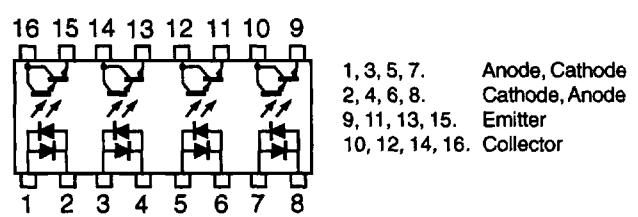
PS2806-4

**PIN CONNECTIONS** (Top View)

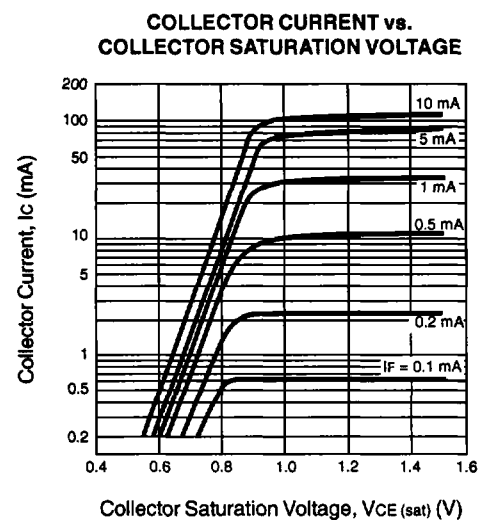
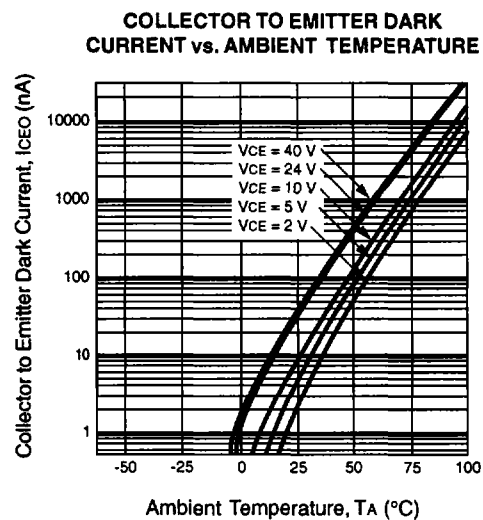
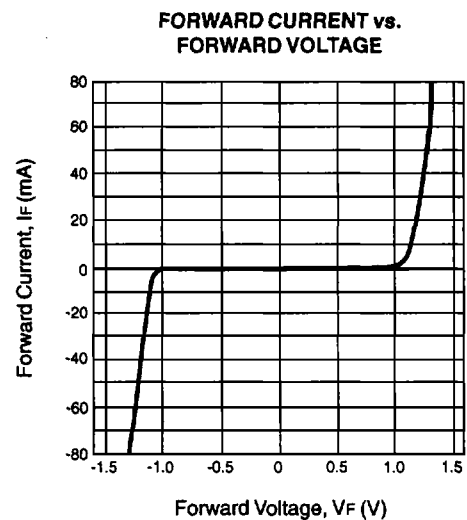
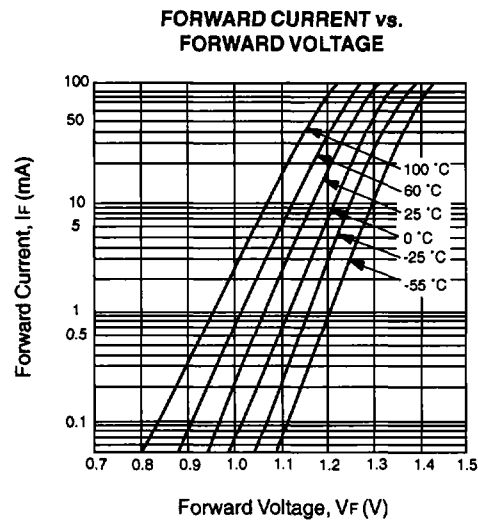
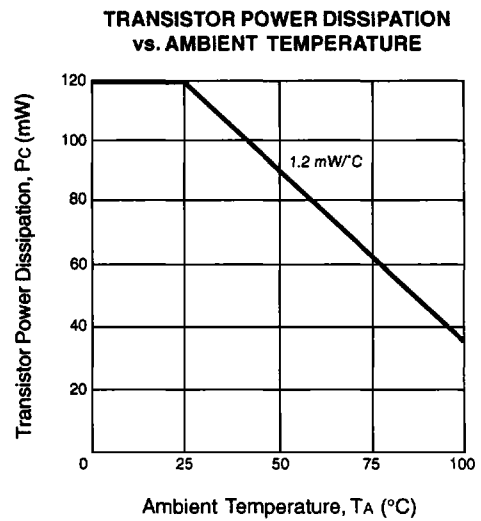
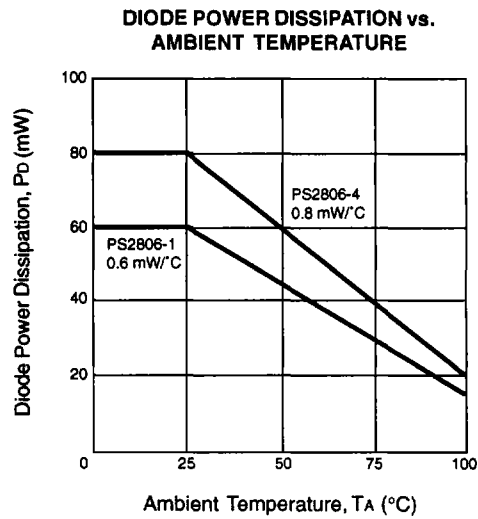
PS2806-1



PS2806-4

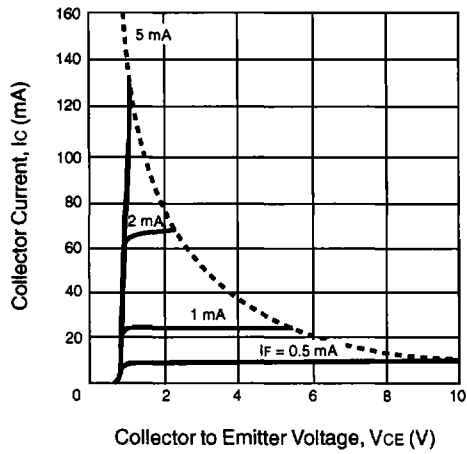


TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)

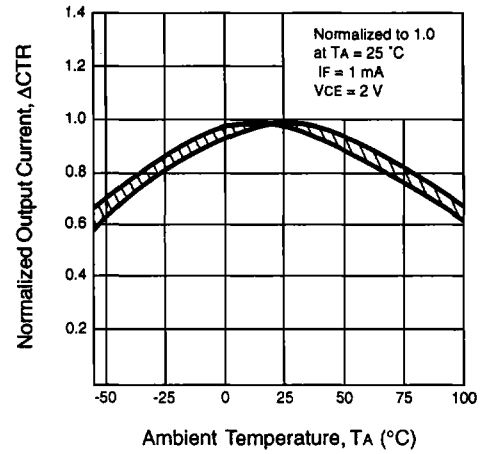


TYPICAL PERFORMANCE CURVES (TA = 25 °C)

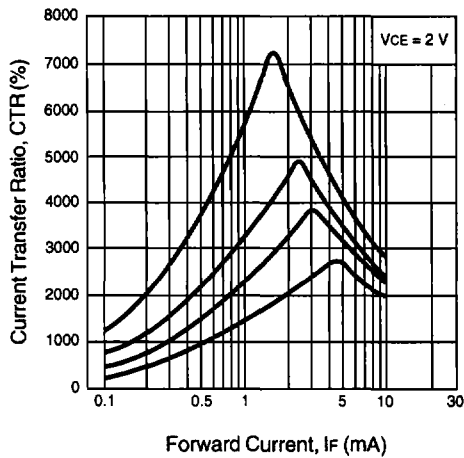
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



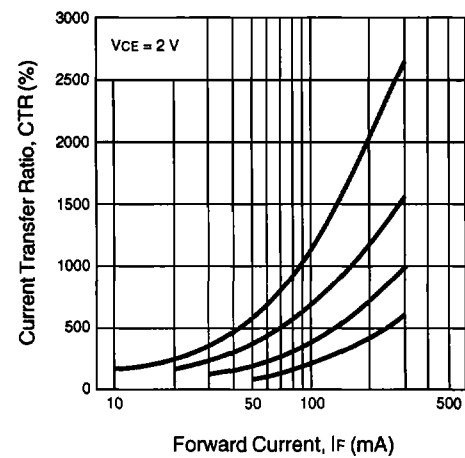
NORMALIZED OUTPUT CURRENT vs. AMBIENT TEMPERATURE



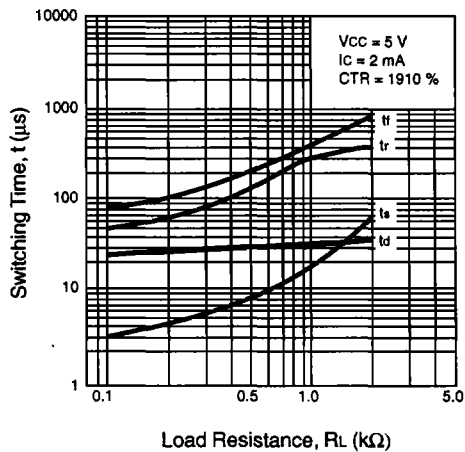
CURRENT TRANSFER RATIO (CTR) vs. FORWARD CURRENT



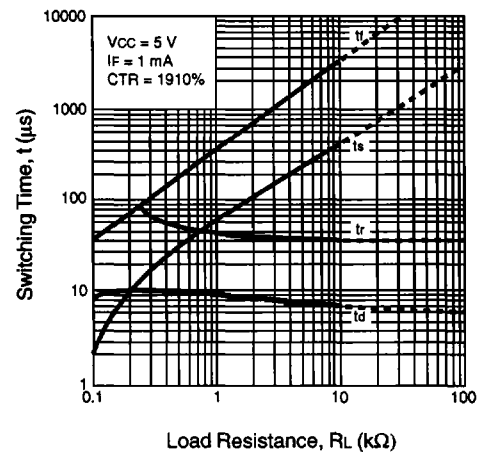
CURRENT TRANSFER RATIO (CTR) vs. FORWARD CURRENT



SWITCHING TIME vs. LOAD RESISTANCE



SWITCHING TIME vs. LOAD RESISTANCE



TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

