CEL

NEC's HIGH ISOLATION VOLTAGE AC INPUT RESPONSE TYPE SOP OPTOCOUPLER

PS2805A-1 PS2805A-4

FEATURES

- **HIGH ISOLATION VOLTAGE:**
  BV = 2 500 Vr.m.s.
- **HIGH CMRR:**
  CMRR = 15 KV/ □s TYP.
- **SMALL AND THIN PACKAGE:**
  4,16-pin SOP, Pin pitch 1.27 mm
- **AC INPUT RESPONSE:**
  Half-pitch 4-pin SOP, 1.27 mm
- **HIGH-SPEED SWITCHING:**
  t_r = 5 □s TYP., t_f = 7 □s TYP.
- **ORDERING NUMBER OF TAPE PRODUCT**
  PS2805A-1-F3, F4, PS2805A-4-F3, F4
- **SAFETY STANDARDS: PS2805A-1, -4**
  UL approved : File No. E72422(S)
  VDE0884 awaiting approval (Option)

DESCRIPTION

NEC's PS2805A-1 and PS2805A-4 are optically coupled isolators containing GaAs light emitting diodes and an NPN silicon phototransistor in a plastic SOP for high density applications, in noisy industrial enviornments.

This package has shield effect to cut off ambient light.

APPLICATIONS

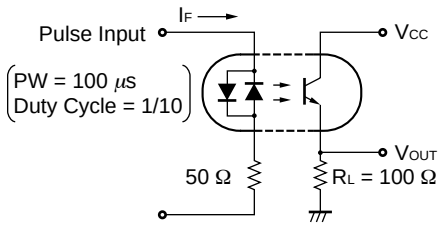
- **PROGRAMMABLE LOGIC CONTROLLERS**
- **MEASURING INSTRUMENTS**
- **HYBRID IC**

ELECTRICAL CHARACTERISTICS (T_A = 25°C, Unless otherwise specified)

	SYMBOL	PARAMETER AND CONDITIONS	MIN	TYP	MAX	UNIT
Diode	V_F	Forward Voltage, I_F = ±5 mA		1.2	1.4	V
	C_t	Terminal Capacitance, V = 0 V, f = 1.0 MHz		20		pF
Transistor	I_{CEO}	Collector to Emitter Dark Current, V_{CE} = 70 V, I_F = 0 mA			100	nA
Coupled	CTR	Current Transfer Ratio (I_C/I_F), I_F = ±5 mA, V_{CE} = 5 V	50		400	%
	$V_{CE(sat)}$	Collector Saturation Voltage, I_F = ±10 mA, I_C = 2 mA		0.13	0.3	V
	R_{I-O}	Isolation Resistance, V_{I-O} = 1.0 kV_{DC}	10^{11}			□
	C_{I-O}	Isolation Capacitance, V = 0 V, f = 1.0 MHz		0.4		pF
	t_r	Rise Time *1, V_{CC} = 5 V, I_C = 2 mA, R_L = 100 □		5		□s
	t_f	Fall Time *1, V_{CC} = 5 V, I_C = 2 mA, R_L = 100 □		7		

Notes

***1** Test circuit for switching time



ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

	SYMBOL	PARAMETER	RATINGS		UNIT
			PS2805A-1	PS2805A-4	
Diode	I_F	Forward Current (DC)	±30		mA
	□P_D/°C	Power Dissipation Derating	0.6	0.8	mW/°C
	P_D	Power Dissipation	60	80	mW/ch
	I_{FP}	Peak Forward Current *1	±0.5		A
Transistor	V_{CEO}	Collector to Emitter Voltage	70		V
	V_{ECO}	Emitter to Collector Voltage	5		V
	I_C	Collector Current	30		mA/ch
	□P_C/°C	Power Dissipation Derating	1.2		mW/°C
	P_C	Power Dissipation	120		mW/ch
BV		Isolation Voltage *2	2 500		Vr.m.s.
T_A		Operating Ambient Temperature	−55 to +100		°C
T_{stg}		Storage Temperature	−55 to +150		°C

Notes:

***1** PW = 100 □s, Duty Cycle = 1 %

***2** AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.

ORDERING INFORMATION

PART NUMBER	PACKAGE	PACKING STYLE	APPLICATION PART NUMBER*1
PS2805A-1	4-pin SOP	50 pcs (Tape 50 pcs cut)	PS2805A-1
PS2805A-1-F3		Embossed Tape 3 500 pcs/reel	
PS2805A-1-F4			
PS2805A-4	16-pin SOP	Magazine Case 45 pcs	PS2805A-4
PS2805A-4-F3		Embossed Tape 2 500 pcs/reel	
PS2805A-4-F4			

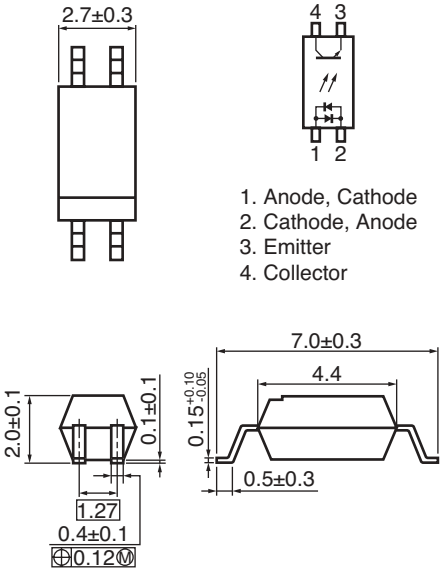
Notes:

***1** For the application of the Safety Standard, following part number should be used.

PACKAGE DIMENSIONS (UNIT:mm)

PS2805A-1

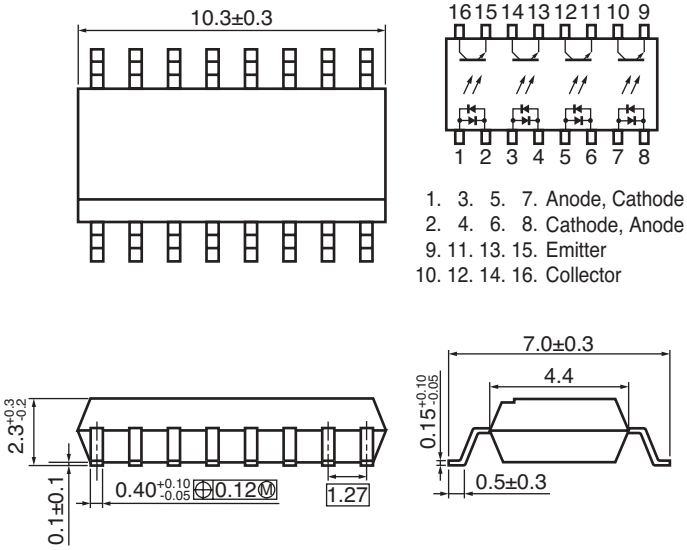
TOP VIEW



1. Anode, Cathode
2. Cathode, Anode
3. Emitter
4. Collector

PS2805A-4

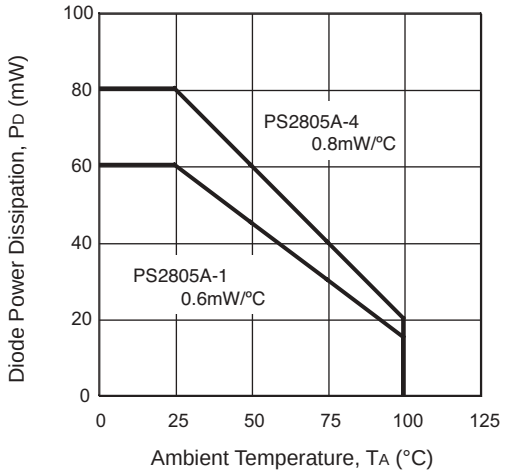
TOP VIEW



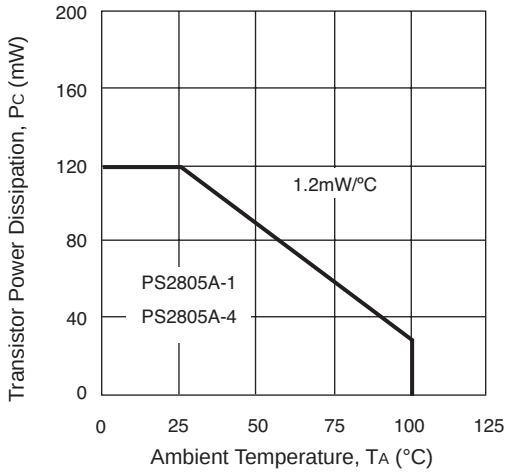
1. 3. 5. 7. Anode, Cathode
2. 4. 6. 8. Cathode, Anode
9. 11. 13. 15. Emitter
10. 12. 14. 16. Collector

TYPICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

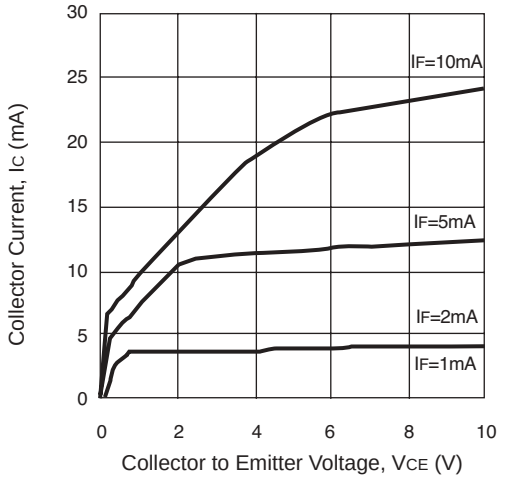
DIODE POWER DISSIPATION vs. AMBIENT TEMPERATURE



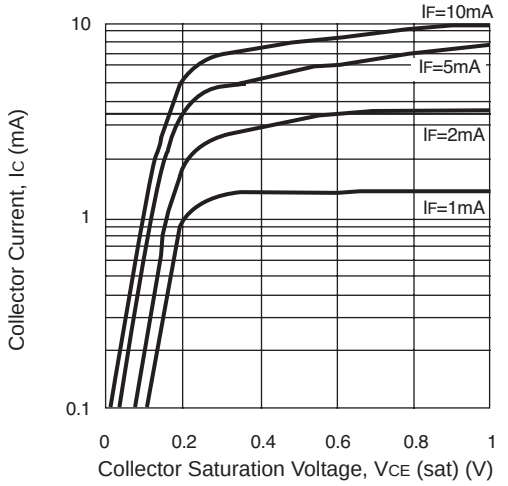
TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE



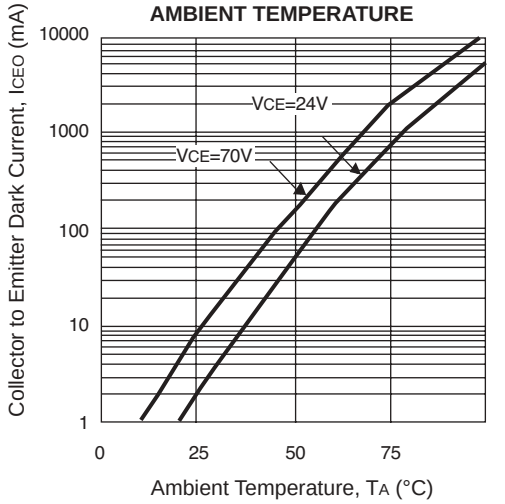
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



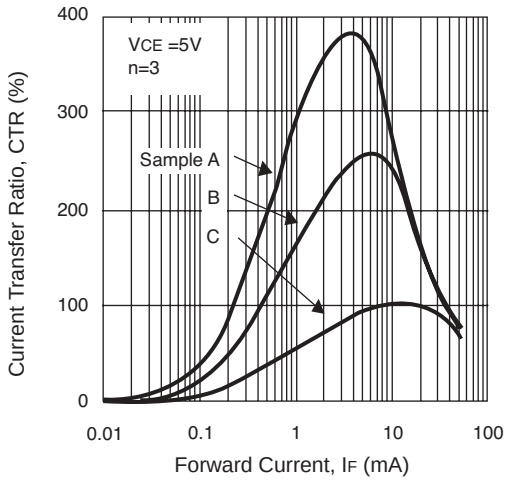
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE

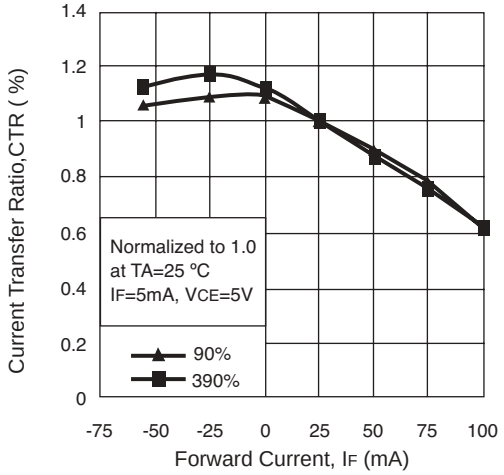


CURRENT TRANSFER RATIO vs. FORWARD CURRENT

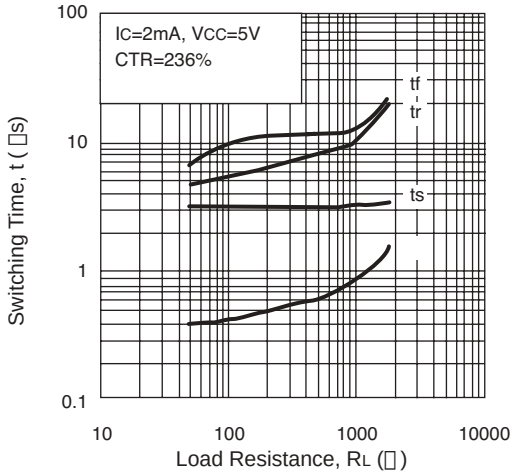


TYPICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

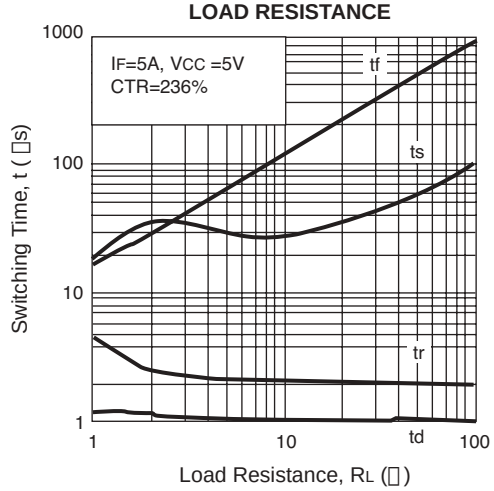
NORMALIZED CURRENT TRANSFER RATIO vs. FORWARD CURRENT



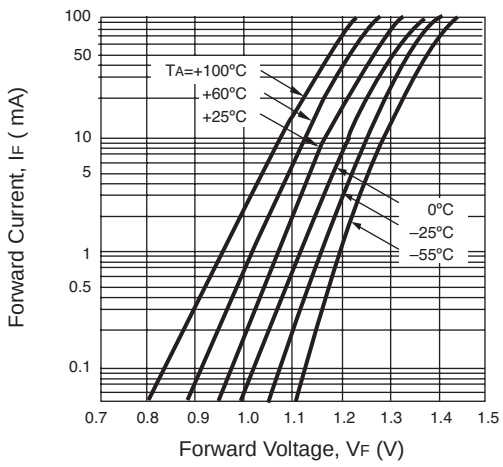
SWITCHING TIME vs. LOAD RESISTANCE



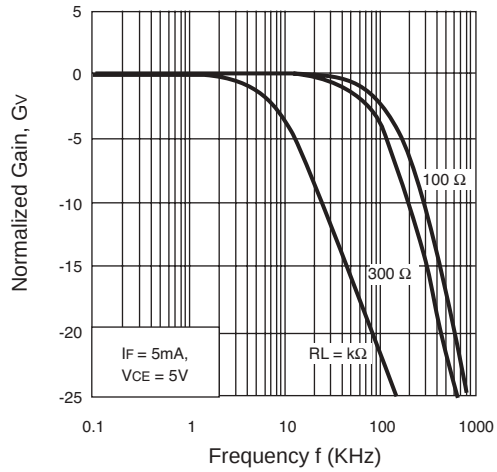
SWITCHING TIME vs. LOAD RESISTANCE



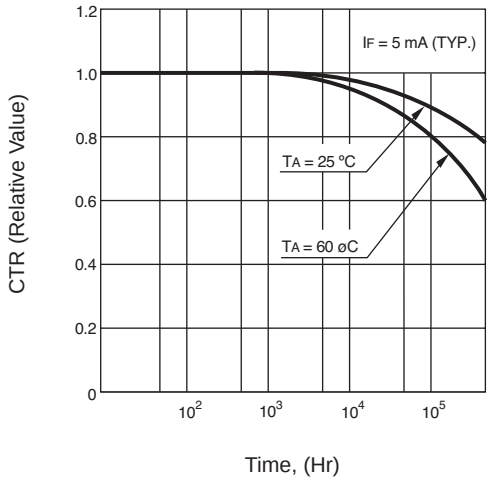
FORWARD CURRENT vs. FORWARD VOLTAGE



FREQUENCY RESPONSE



LONG TERM CTR DERADATION



Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.