

PHOTO COUPLERS

PS2403-1, PS2403-2, PS2403-3, PS2403-4

MULTI PHOTO COUPLER HIGH ISOLATION VOLTAGE SINGLE TRANSISTOR TYPE

DESCRIPTION

The PS2403-1, -2, -3 and -4 series are optically coupled isolator containing a GaAs light emitting diode and an NPN silicon photo transistor. Each is mounted in a dual in-line package.

FEATURES

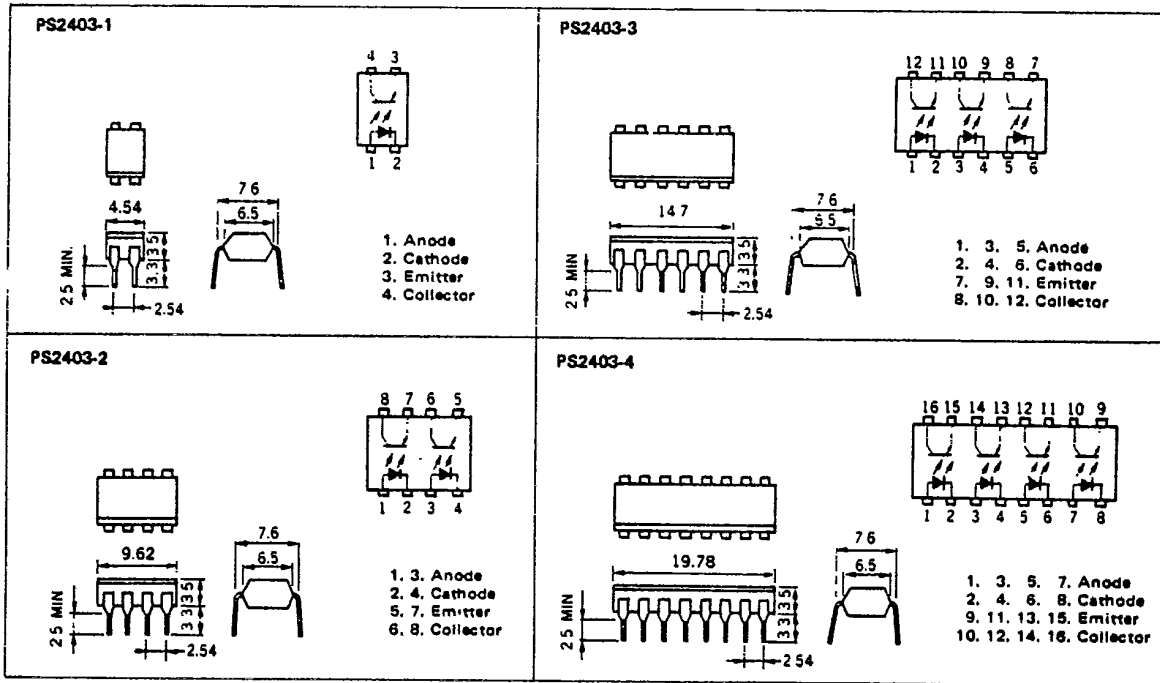
- Small package size
- Each isolated channels per package
- High isolation voltage 5 000 V_{ac} Rating
- Low input current
- Low cost
- UL recognized

APPLICATIONS

Interface circuit for various instrumentations, control equipments.

- AC Line/Digital Logic Isolate high voltage transients
- Digital Logic/Digital Logic Eliminate spurious ground loops
- Twisted pair line receiver Eliminate ground loop pick-up
- Telephone/Telegraph line receiver Isolate high voltage transients
- High Frequency Power Supply
Feedback Control Maintain floating ground
- Relay contact monitor Isolate floating grounds and transients
- Power Supply Monitor Isolate transients and ground systems

PACKAGE DIMENSIONS (Unit : mm)



PS2403-1, PS2403-2, PS2403-3, PS2403-4

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ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Diode		(PS2403-1)	(PS2403-2, PS2403-3, PS2403-4)	
Reverse Voltage	V_R	6.0	6.0	V
Forward Current (DC)	I_F	50	50	mA
Power Dissipation	P_D	150	120	mW/Unit
Peak Forward Current (300 μs , 2 % duty cycle)	$I_{F(\text{peak})}$	3	3	A
Transistor				
Collector to Emitter Voltage	V_{CE0}	40	40	V
Emitter to Collector Voltage	V_{ECO}	7	7	V
Collector Current	I_C	30	30	mA
Power Dissipation	P_C	150	120	mW/Unit
Isolation Voltage *1	BV	5000	5000	V_{ac}
Storage Temperature	T_{stg}	-55 to +150	-55 to +150	$^\circ\text{C}$
Operating Temperature	T_{opt}	-55 to +100	-55 to +100	$^\circ\text{C}$
Lead Temperature (Soldering 10 s)	T_{sol}	260	260	$^\circ\text{C}$
Total Power Dissipation	P_T	250	200	mW/Unit

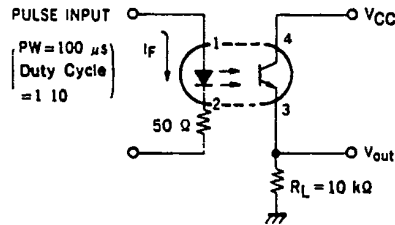
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

	CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V_F		1.1	1.3	V	$I_F = 1 \text{ mA}$
	Reverse Current	I_R			5	μA	$V_R = 5 \text{ V}$
	Junction Capacitance	C		50		pF	$V = 0, f = 1.0 \text{ MHz}$
Transistor	Collector to Emitter Dark Current	I_{CEO}			100	nA	$V_{CE} = 40 \text{ V}, I_F = 0$
	Collector to Emitter Breakdown Voltage	BV_{CEO}	40	60		V	$I_C = 1 \text{ mA}, I_B = 0$
	Emitter to Collector Breakdown Voltage	BV_{ECO}	7	9		V	$I_E = 100 \mu\text{A}, I_B = 0$
Coupled	Current Transfer Ratio *2	$CTR(I_C/I_F)$	100	200	400	%	$I_F = 1 \text{ mA}, V_{CE} = 5.0 \text{ V}$
	Collector Saturation Voltage	$V_{CE(sat)}$			0.25	V	$I_F = 1 \text{ mA}, I_C = 0.2 \text{ mA}$
	Isolation Resistance	R_{1-2}	10^{11}			Ω	$V_{in-out} = 1.0 \text{ kV}$
	Isolation Capacitance	C_{1-2}		0.5		pF	$V = 0, f = 1.0 \text{ MHz}$
	Rise Time *3	t_r		8		μs	$V_{CC} = 5 \text{ V}, I_F = 1 \text{ mA}, R_L = 10 \text{ k}\Omega$
Fall Time *3	t_f		60		μs	$V_{CC} = 5 \text{ V}, I_F = 1 \text{ mA}, R_L = 10 \text{ k}\Omega$	

*1 AC voltage for 1 minute at $T_a = 25^\circ\text{C}$
RH = 60 %

*2 CTR rank (Only PS2403-1)
KY: 200 % to 400 %
LY: 150 % to 300 %
MY: 100 % to 200 %

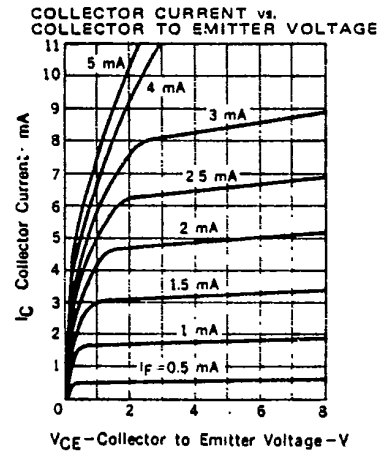
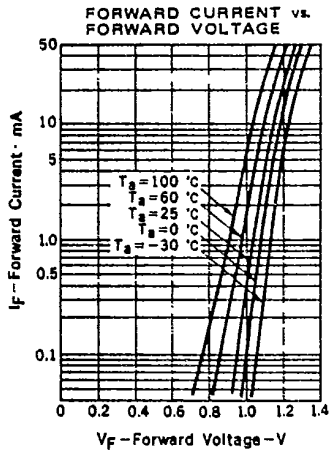
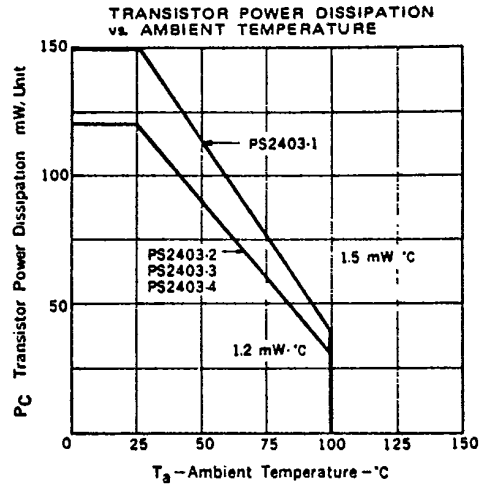
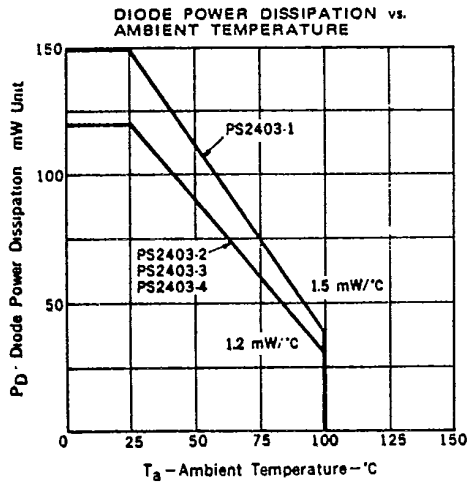
*3 Test Circuit for Switching Time



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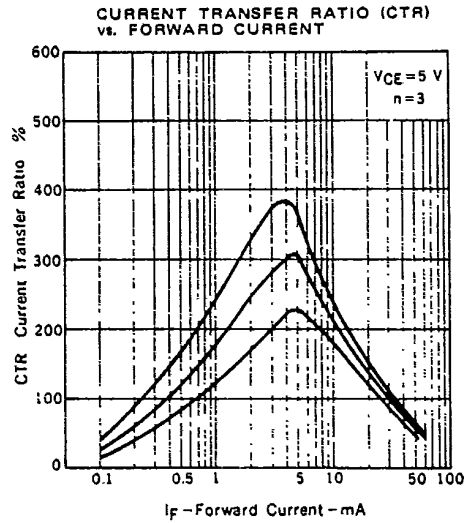
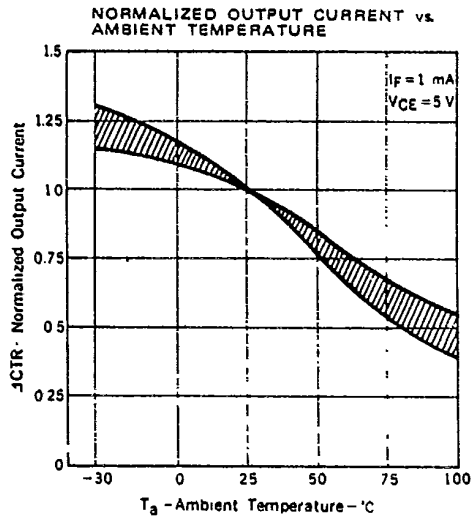
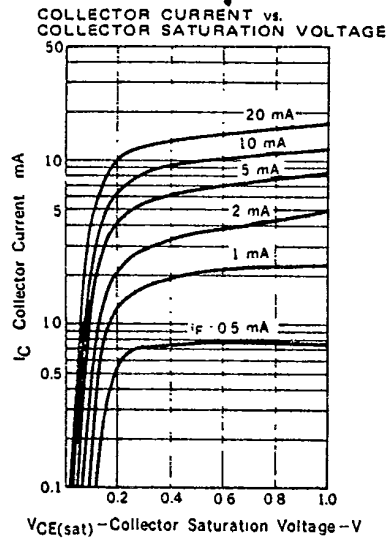
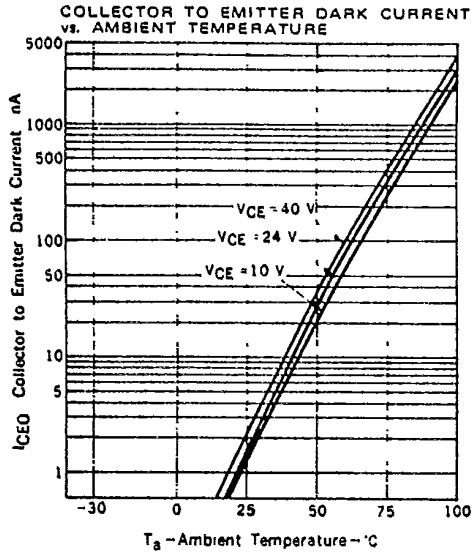
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TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



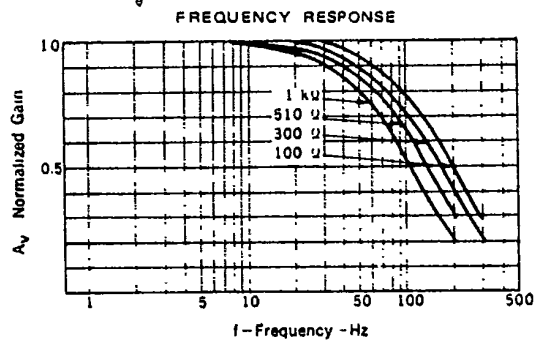
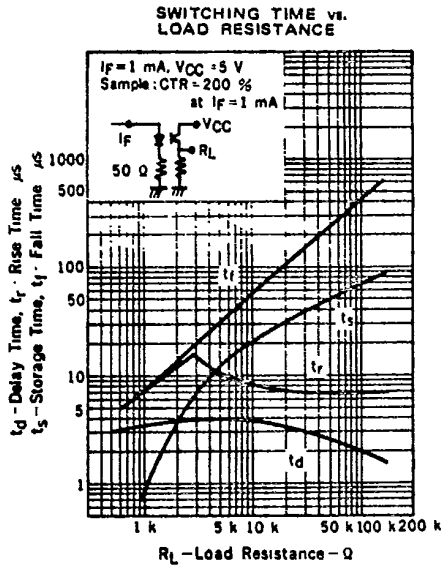
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