

NEC

WORLD'S SMALLEST CLASS, FOUR CHANNEL, 12 PIN ULTRA SMALL SOP OPTOCOUPLER

PS2841-4A
PS2841-4B

FEATURES

- **COMMON LEAD:**
PS2841-4A: cathode, collector common
PS2841-4B: anode, collector common
- **HIGH CURRENT TRANSFER RATIO:**
CTR = 200 % TYP @ $I_F = 1 \text{ mA}$
- **ULTRA SMALL THIN PACKAGE:**
12-pin ultra small SOP, Pin Pitch = 0.8 mm
- **HIGH ISOLATION VOLTAGE:**
BV = 2000 Vr.m.s.
- **AVAILABLE IN TAPE AND REEL**

DESCRIPTION

The PS2841-4A and PS2841-4B are optically coupled isolators containing a GaAs light emitting diode and an NPN silicon phototransistor. These products include four channels in a single package for high-density mounting applications.

The PS2841-4A and PS2841-4B are the world's smallest class of optocouplers and realize about 50% reduction in mounting area compared with the PS280X and PS281X series.

APPLICATIONS

- **PROGRAMMABLE LOGIC CONTROLLERS (PLCs)**

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

PART NUMBER			PS2841-4A, -4B		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V_F Forward Voltage, $I_F = 1 \text{ mA}$	V	0.9	1.1	1.2
	I_R Reverse Current, $V_R = 5 \text{ V}$	μA			5
	C_t Terminal Capacitance, $V = 0 \text{ V}$, $f = 1 \text{ MHz}$	pF		15	
Transistor	I_{CEO} Collector to Emitter Current, $I_F = 0 \text{ mA}$, $V_{CE} = 70 \text{ V}$	nA			100
Coupled	CTR Current Transfer Ratio (I_C/I_F)				
		$I_F = 1 \text{ mA}$, $V_{CE} = 0.4 \text{ V}$			
		$I_F = 1 \text{ mA}$, $V_{CE} = 5 \text{ V}$	100		600
	$V_{CE(sat)}$ Collector Saturation Voltage, $I_F = 1 \text{ mA}$, $I_C = 0.2 \text{ mA}$	V		0.13	0.3
	R_{i-o} Isolation Resistance, $V_{i-o} = 1.0 \text{ KVdc}$	Ω	10^{11}		
	C_{i-o} Isolation Capacitance, $V = 0 \text{ V}$, $f = 1 \text{ MHz}$	pF		0.4	
	t_{ON} Turn-on Time	$V_{CC} = 5 \text{ V}$, $I_F = 1 \text{ mA}$, $R_L = 5 \text{ k}\Omega$		20	
	t_{OFF} Turn-off Time			110	

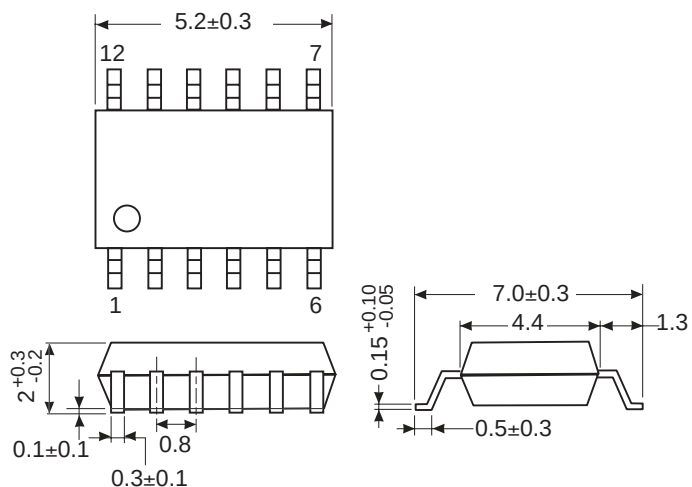
ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Diode			
I _F	Forward Current (DC)	mA	50
V _R	Reverse Voltage	V	6
ΔP _D /°C	Power Dissipation Derating	mW/°C	0.3
P _D	Power Dissipation	mW/ch	30
I _{FP}	Peak Forward Current ²	A	0.5
Transistor			
V _{CEO}	Collector to Emitter Voltage	V	70
V _{ECO}	Emitter to Collector Voltage	V	5
I _C	Collector Current	mA/ch	20
ΔP _C /°C	Power Dissipation Derating	mW/°C	0.4
P _D	Power Dissipation	mW/ch	40
Coupled			
BV	Isolation Voltage ³	Vr.m.s.	2000
T _A	Operating Ambient Temp.	°C	-55 to +100
T _{STG}	Storage Temperature	°C	-55 to +125

Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. PW = 100 μs, Duty Cycle 1%.
3. AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.

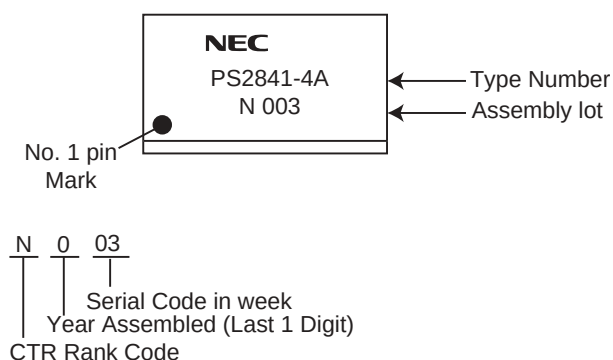
OUTLINE DIMENSIONS (Units in mm)



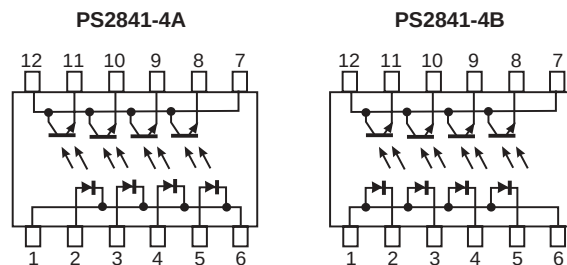
PS2841-4A PIN CONNECTIONS

Channel	Anode	Cathode	Emitter	Collector
1 ch	2	1, 6 common	11	7, 12 common
2 ch	3	1, 6 common	10	7, 12 common
3 ch	4	1, 6 common	9	7, 12 common
4 ch	5	1, 6 common	8	7, 12 common

MARKING EXAMPLE



TOP VIEW



PS2841-4B PIN CONNECTIONS

Channel	Anode	Cathode	Emitter	Collector
1 ch	1, 6 common	2	11	7, 12 common
2 ch	1, 6 common	3	10	7, 12 common
3 ch	1, 6 common	4	9	7, 12 common
4 ch	1, 6 common	5	8	7, 12 common

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