HAMAMATSU

TECHNICAL DATA

MINI-FLAT PACKAGE PHOTOCOUPLERS P2823 SERIES

T-41-89

LED input, photo IC output (digital output), 6-pin mini-flat package offers surface mounting

The P2823 is a digital output photocoupler consisting of a high-speed infrared LED and a single chip photo IC (which comprises a photodiode, amplifier, schmidt trigger circuit, and output transistor). Package as a 6-pin mini-flat type, it offers surface mounting on a printed circuit board. The open collector output permits a wide selection of load resistances. Two types of I/O format are available, the P2823 with normally OFF and the P2823-01 with normally ON. Applications include signal interface for musical instruments, logic signal interface for computers, etc.

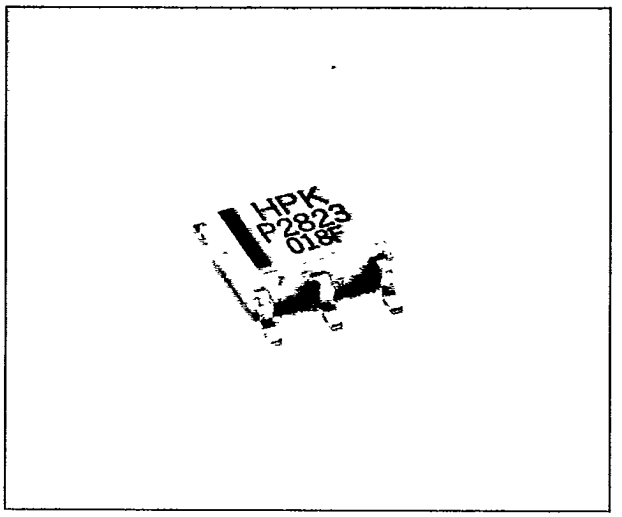


Figure 1: Dimensional Outline and Pin Connection (Unit:mm)

FEATURES

- **6-pin mini-flat package**
- **Open collector output**
- **TTL compatible**
- **High input-output isolation voltage : 3500 Vrms Min.**
- **Surface-mountable**
- **Taping available (option)**
- **UL listed (E75221)**

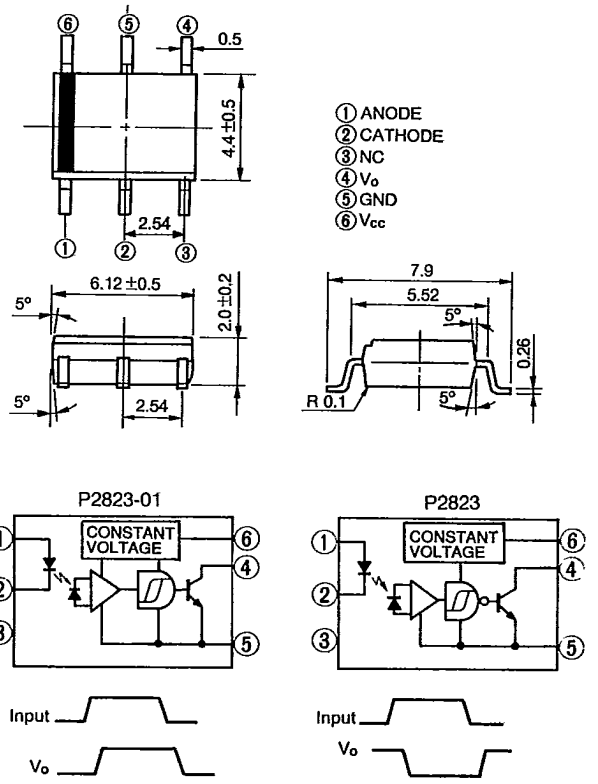
APPLICATIONS

- **Logic interface for electronic musical instruments**
- **Noise reduction for electronic devices**
- **Logic interface for computers**

MAXIMUM RATINGS (Ta = 25°C)

Parameters		Symbols	Ratings	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	5	V
	Power Dissipation	P	75	mW
Output	Power Supply Voltage	V_{CC}	16	V
	High Level Output Voltage	V_{OH}	16	V
	Low Level Output Current	I_{OL}	50	mA
	Power Dissipation	P_O	150	mW
Isolation Voltage (1)		V_{iso}	3500	Vrms
Operating Temperature		T_{opr}	−25 ~ +85	°C
Storage Temperature		T_{stg}	−40 ~ +125	°C
Soldering Temperature		260°C, within 10 seconds		

(1) RH40 ~ 60%, 1 minute



MINI-FLAT PACKAGE PHOTOCOUPLER P2823 SERIES

ELECTRICAL CHARACTERISTICS (Ta = 0 ~ 70°C)

	Parameters	Symbols	Conditions	P2823-01			P2823			Unit
				Min.	Typ.	Max.	Min.	Typ.	Max.	
Input	Forward Voltage	V_F	I_F = 4mA	–	1.1	1.4	–	1.1	1.4	V
	Reverse Current	I_R	Ta = 25°C, V_R = 3V	–	–	10	–	–	10	μA
	Terminal Capacitance	C_t	Ta = 25°C, V = 0, f = 1kHz	–	30	–	–	30	–	pF
Output	Operating Supply Voltage	V_{CC}		4.5	–	16	4.5	–	16	V
	Low Level Output Voltage	V_{OL}	V_{CC} = 5V, I_{OL} = 16mA, I_F = 0/5mA	–	–	0.4	–	–	0.4	V
	High Level Output Current	I_{OH}	V_{CC} = V_O = 15V, I_F = 5/0mA	–	–	100	–	–	100	μA
	Low Level Supply Current	I_{CCL}	V_{CC} = 5V, I_F = 0/5mA	–	5.2	12	–	6.3	15	mA
	High Level Supply Current	I_{CCH}	V_{CC} = 5V, I_F = 5/0mA	–	3.2	10	–	4.5	10	mA
Transfer Characteristics	L→H Threshold Input Current (1)	I_{FLH}	Ta = 25°C, V_{CC} = 5V, R_L = 280Ω	–	1.0	5.0	–	1.0	–	mA
	H→L Threshold Input Current (1)	I_{FHL}	Ta = 25°C, V_{CC} = 5V, R_L = 280Ω	–	0.9	–	–	1.2	5.0	mA
	Hysteresis		V_{CC} = 5V, R_L = 280Ω I_{FHL}/I_{FLH}, I_{FLH}/I_{FHL}	–	0.9	–	–	0.9	–	–
	Isolation Resistance	R_{iso}	Ta = 25°C, DC500V, RH40~60%	$5x10^{10}$	–	–	$5x10^{10}$	–	–	Ω
	L→H Propagation Delay Time (2)	t_{PLH}	Ta = 25°C, V_{CC} = 5V	–	1.4	–	–	6.3	15	μs
	H→L Propagation Delay Time (2)	t_{PHL}	I_F = 5mA	–	6.5	10	–	1.7	10	μs
	Rise Time (2)	t_r	R_L = 280Ω	–	0.15	15	–	0.03	–	μs
	Fall Time (2)	t_f		–	0.03	–	–	0.15	–	μs

(1) Connect a capacitor of more than 0.1 μF between Vcc and GND.

(2) Response Time Measuring Circuit

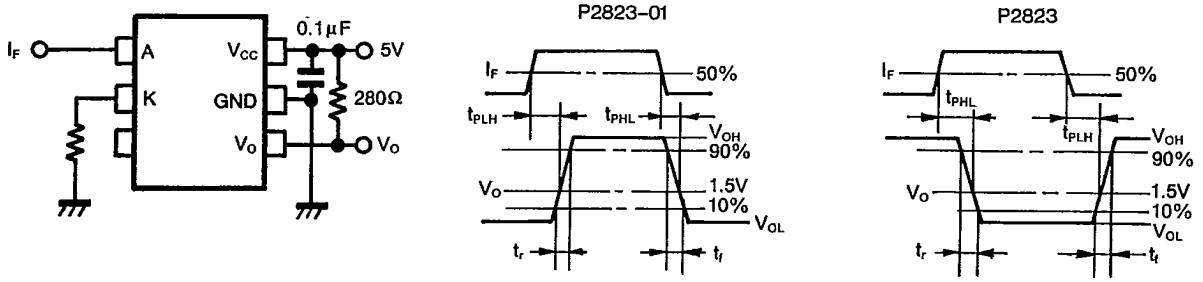


Figure 2: LED Allowable Forward Current vs. Temperature

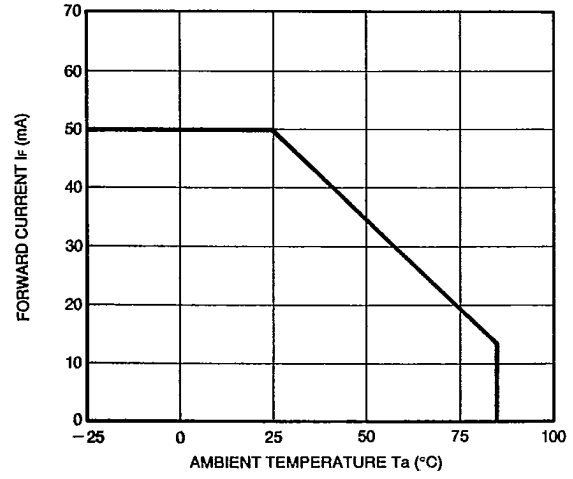


Figure 3: Photo IC Allowable Power Dissipation vs. Temperature

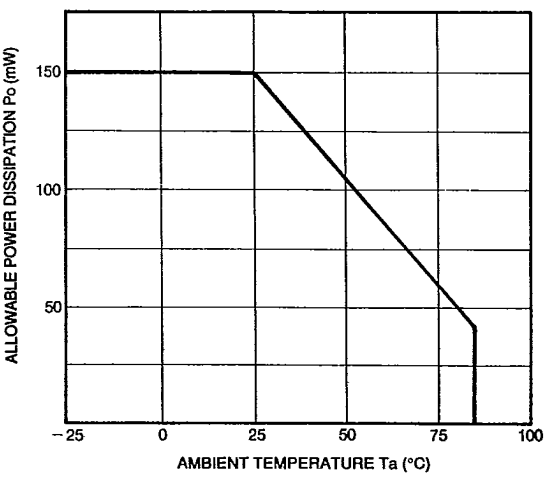


Figure 4: Forward Current vs. Forward Voltage

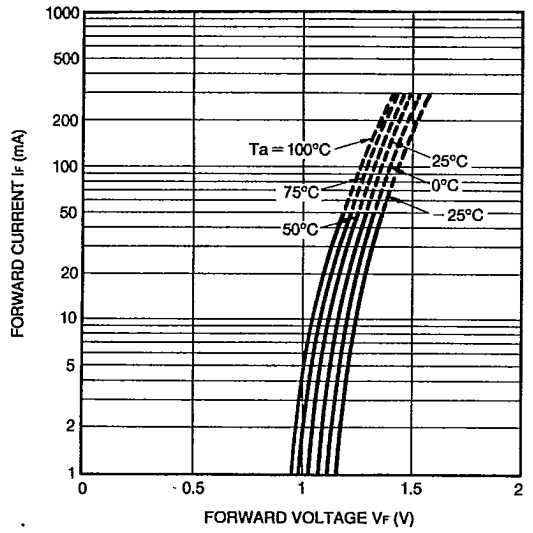


Figure 5: Supply Current vs. Temperature

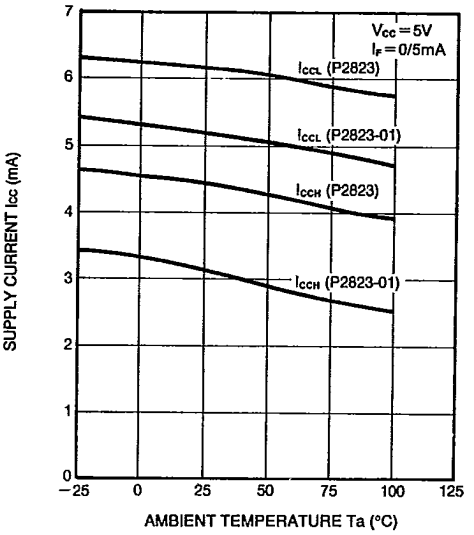


Figure 6: Low Level Output Voltage vs. Output Current

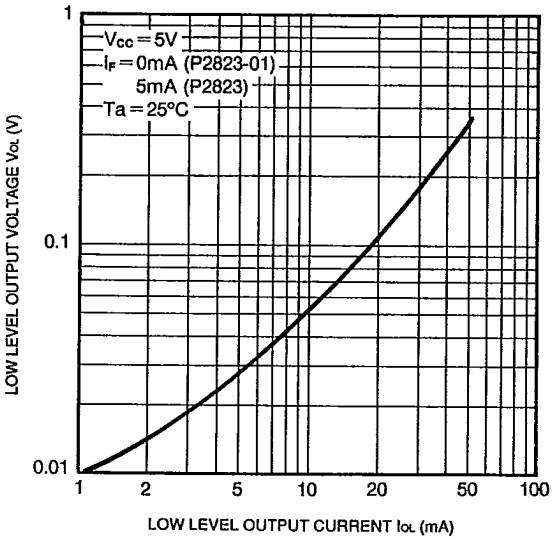


Figure 7: Low Level Output Voltage vs. Temperature

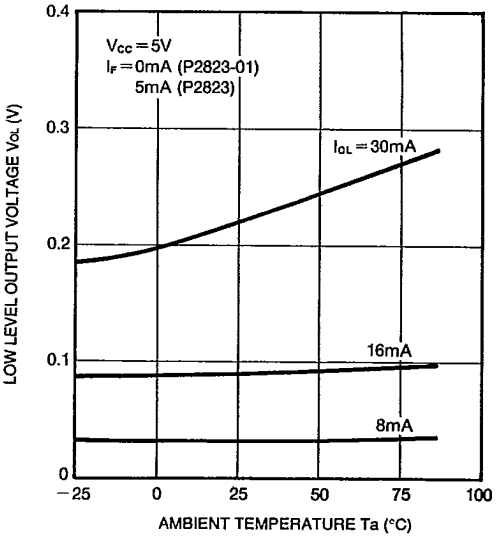


Figure 8: Threshold Input Current vs. Temperature

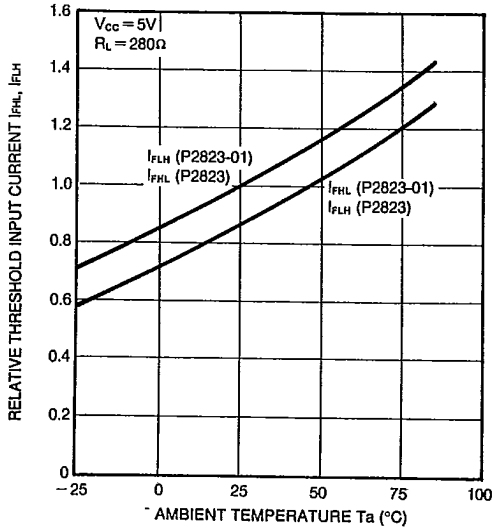


Figure 9: Threshold Input Current vs. Supply Voltage

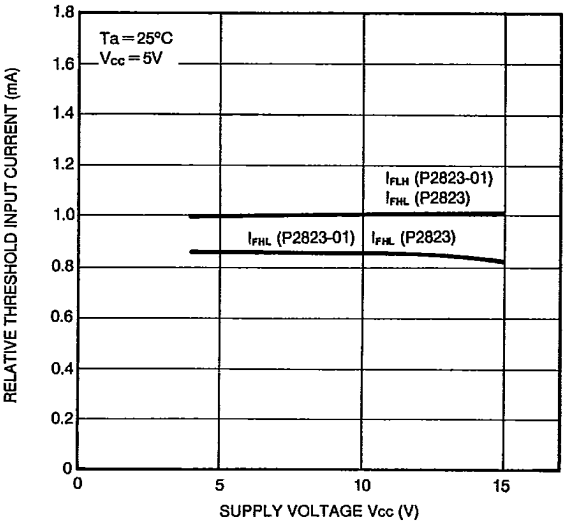


Figure 10: Propagation Delay Time vs. Forward Current

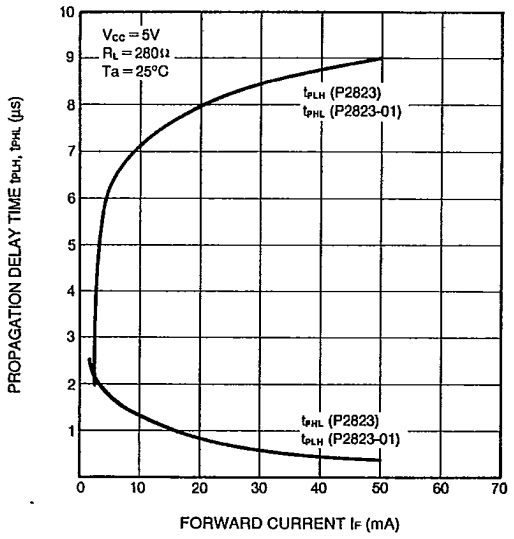


Figure 11: Rise/Fall Time vs. Load Resistance