HAMAMATSU

TECHNICAL DATA

PHOTOINTERRUPTER P2825 SERIES

T-41-73

Photo IC output (digital output), High resolution (slit width 0.5mm)

The P2825 series photointerrupter uses a high power infrared LED and a single chip photo IC (which comprises a photodiode, amplifier, schmidtt trigger circuit, and output transistor). The standard gap of 3.2 mm and slit width of 0.5 mm provide high sensing accuracy. Digital output and low input current operation make the P2825 series well suited for timing detection in photo-copiers, printers, facsimiles, and floppy disc drives. Two types of output format are available, the P2825 with normally OFF and the P2825-01 with normally ON.

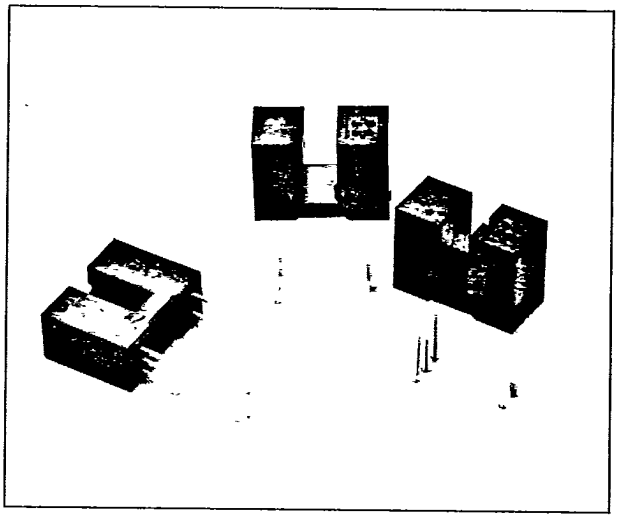
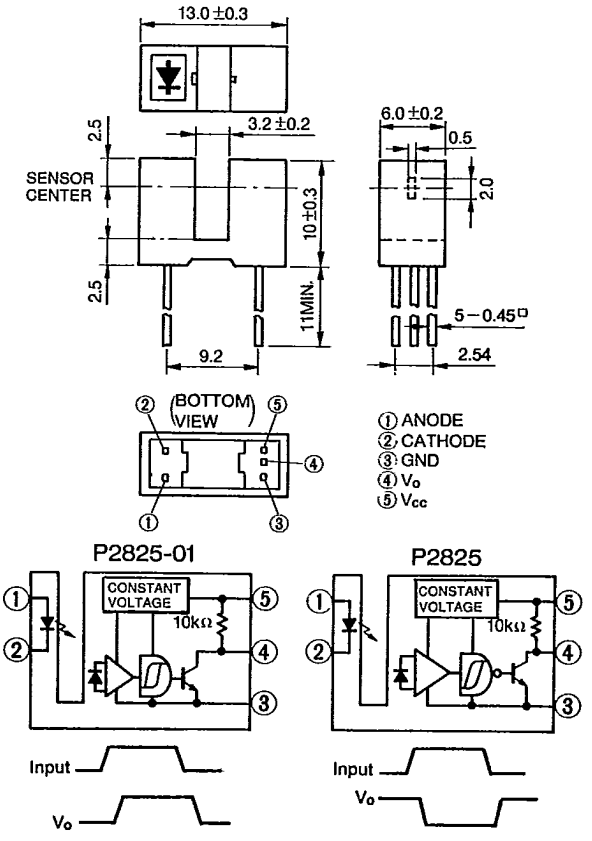


Figure 1: Dimensional Outline and Pin Connection (Unit:mm)



FEATURES

- **Photo IC output (digital output)**
- **High resolution (slit width 0.5mm)**
- **Visible-cut type**

APPLICATIONS

- **Timing detection for copiers, printers, etc.**
- **Tape-end detection, edge detection**
- **Photoelectric switches for cordless telephones, CDs, etc.**

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	Supply Voltage	V_{CC}	16	V
	Low Level Output Current	I_{OL}	50	mA
	Power Dissipation	P_O	250	mW
Operating Temperature		T_{opr}	−25 ~ +85	°C
Storage Temperature		T_{stg}	−40~+100	°C
Soldering Temperature		260°C, within 5 seconds		

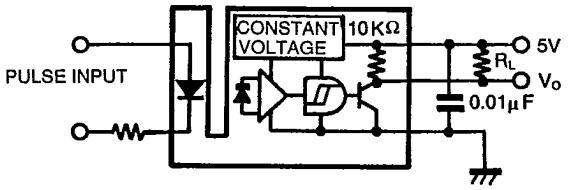
PHOTOINTERRUPTER P2825 SERIES

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	Parameters	Symbols	Conditions	P2825-01			P2825			Unit
				Min.	Typ.	Max.	Min.	Typ.	Max.	
Input	Forward Voltage	V_F	I_F=20mA	–	1.2	1.4	–	1.2	1.4	V
	Reverse Current	I_R	V_R=5V	–	–	10	–	–	10	μA
	Terminal Capacitance	C_t	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=0/8mA	–	0.1	0.4	–	0.1	0.4	V
	High Level Output Voltage	V_{OH}	V_{CC}=5V, I_F=8/0mA	4.9	–	–	4.9	–	–	V
	Low Level Supply Current	I_{CCL}	V_{CC}=5V, I_F=0/8mA	–	5.2	12	–	6.3	15	mA
	High Level Supply Current	I_{CCH}	V_{CC}=5V, I_F=8/0 mA	–	3.2	10	–	4.5	10	mA
Transfer Characteristics	L→H Threshold Input Current (1)	I_{FLH}	V_{CC}=5V	–	2.5	5.0	–	–	–	mA
	H→L Threshold Input Current (1)	I_{FHL}	V_{CC}=5V	–	–	–	–	3.0	6.0	mA
	Hysteresis		V_{CC}=5V I_{FHL}/I_{FLH} I_{FLH}/I_{FHL}	–	0.9	–	–	0.9	–	–
	L→H Propagation Delay Time (2)	t_{PLH}	V_{CC}=5V, I_F=8mA R_L=280 Ω	–	2.0	9	–	5.0	15	μs
	H→L Propagation Delay Time (2)	t_{PHL}		–	4.0	15	–	1.5	9	μs
	Rise Time (2)	t_r		–	0.15	–	–	0.03	–	μs
	Fall Time (2)	t_f		–	0.03	–	–	0.15	–	μs

(1) Connect a capacitor of more than 0.01 μF between Vcc and GND.

(2) Response Time Measuring Circuit



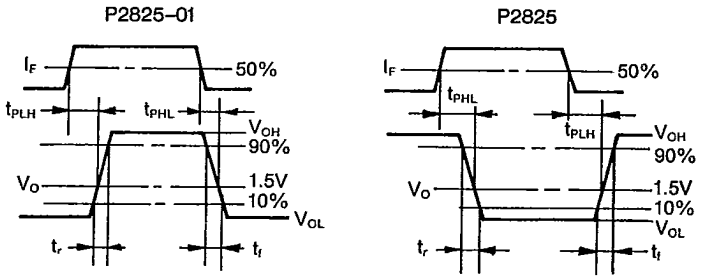


Figure 2: LED Allowable Forward Current vs. Temperature

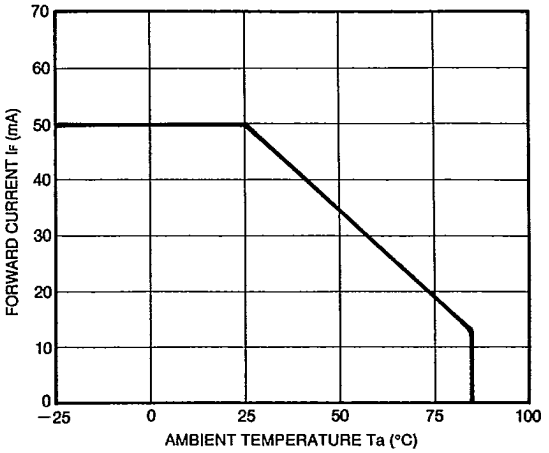


Figure 3: Photo IC Allowable Power Dissipation vs. Temperature

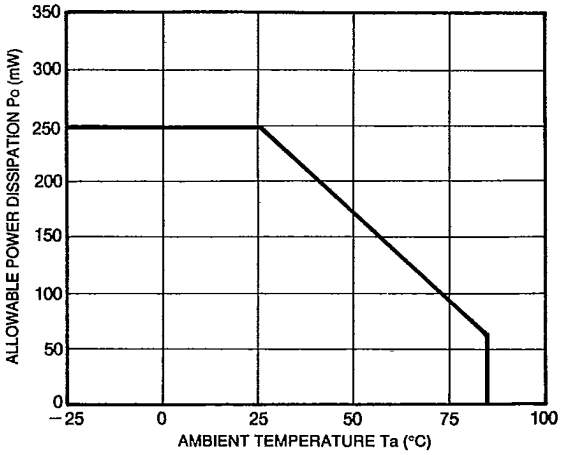


Figure 4: Forward Current vs. Forward Voltage

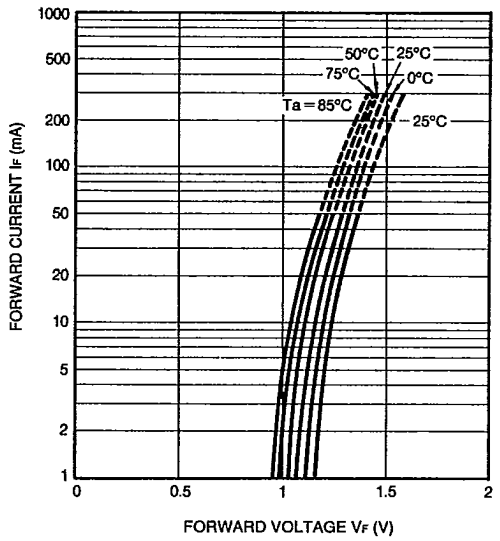


Figure 5: Low Level Output Voltage vs. Output Current

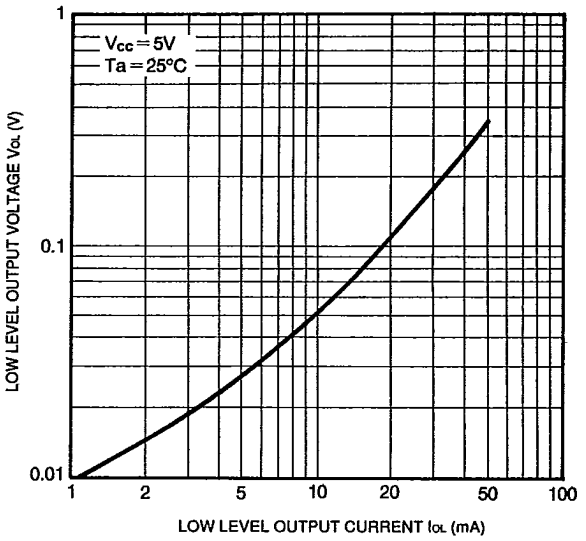


Figure 6: Threshold Input Current vs. Supply Voltage

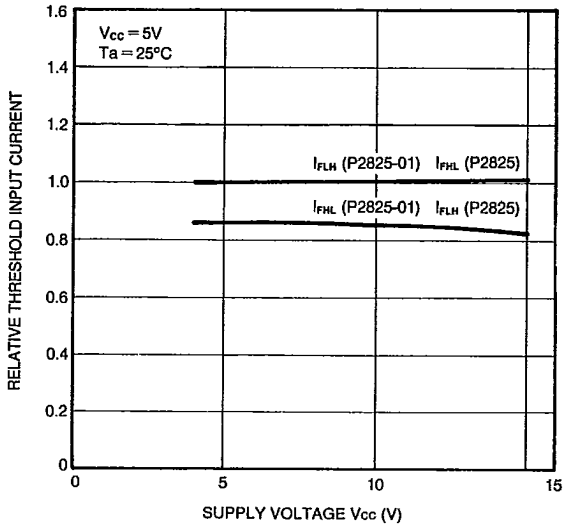


Figure 7: Supply Current vs. Temperature

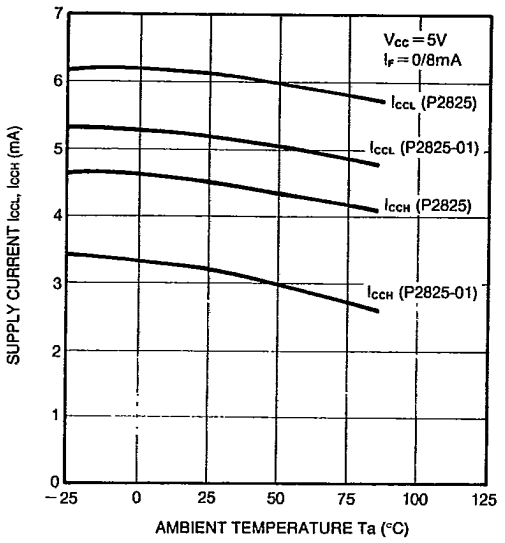


Figure 8: Low Level Output Voltage vs. Temperature

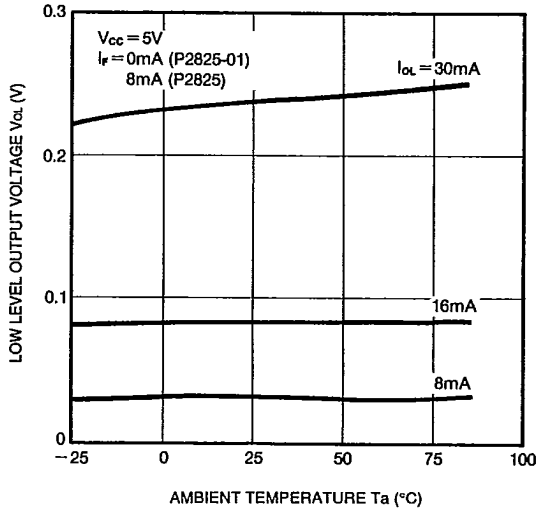
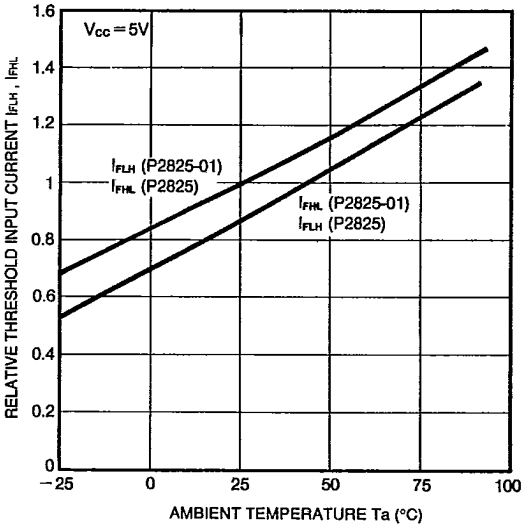


Figure 9: Threshold Input Current vs. Temperature



PHOTOINTERRUPTER P2825 SERIES

Figure 10: Propagation Delay Time vs. Forward Current

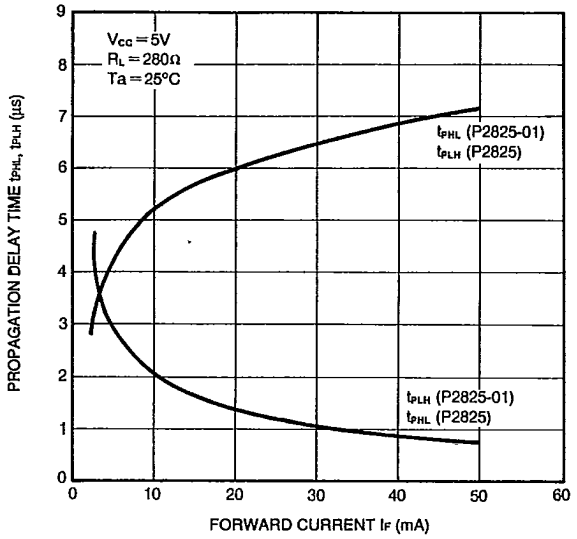


Figure 11: Rise/Fall Time vs. Load Resistance