HAMAMATSU

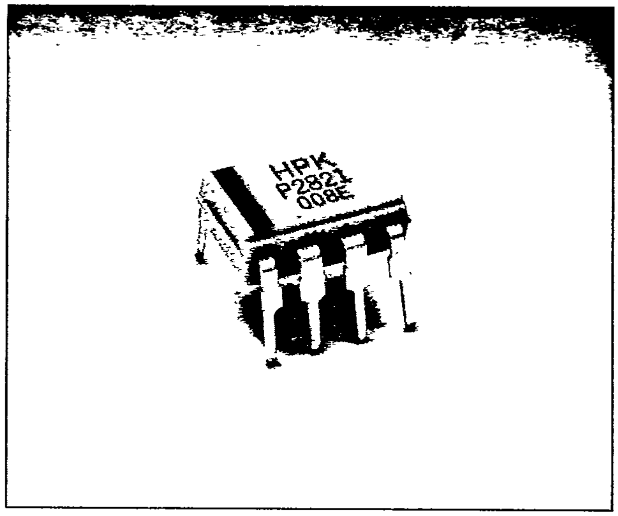
TECHNICAL DATA

PHOTOCOUPLER P2821

T-41-89

High-speed LED input, High-speed photo IC output (analog output)

The P2821 is a photocoupler consisting of a high-speed infrared LED and a single chip photo IC (which comprises a high speed photodiode and a transistor). Packaged as a standard 8 pin DIP (dual in-line package) it is highly reliable, therefore well suited for high-speed analog signal transmission of video signals, and electronic motor control.



FEATURES

- **High-speed response : 300 ns Typ.**
- **High input-output isolation voltage : 5000 Vrms Min.**
- **TTL compatible**
- **UL listed (E75221)**

APPLICATIONS

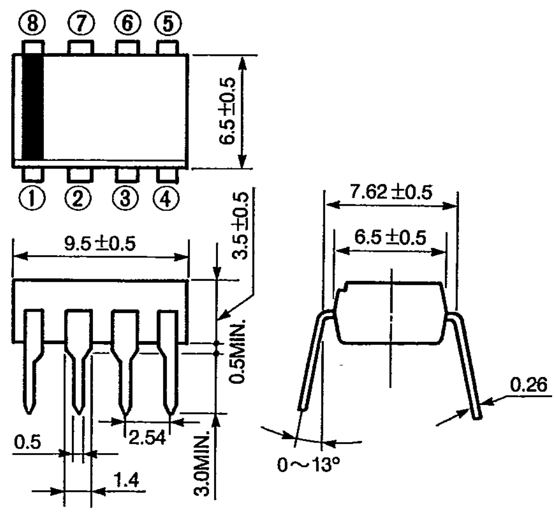
- **Video signal interface for color TV sets**
- **High-speed I/O interface for computers**
- **Line receiver interface**
- **Electronic motor control**
- **Switching regulator**

MAXIMUM RATINGS (Ta=25°C)

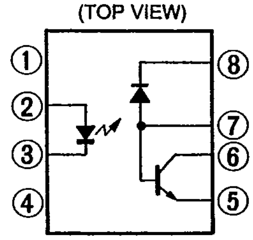
	Parameters	Symbols	Ratings	Unit
Input	Forward Current	I_F	25	mA
	Reverse Voltage	V_R	5	V
	Power Dissipation	P	45	mW
Output	Supply Voltage	V_{CC}	−0.5 ~ +15	V
	Output Voltage	V_O	−0.5 ~ +15	V
	Output Current	I_O	8	mA
	Emitter-Base Voltage	V_{EBO}	5	V
	Collector Power Dissipation	P_C	100	mW
Isolation Voltage (1)		V_{iso}	5000	Vrms
Operating Temperature		T_{opr}	−25 ~ +100	°C
Storage Temperature		T_{stg}	−40 ~ +125	°C
Soldering Temperature		260°C, within 10 sec.		

(1) RH40 ~ 60%, 1 minute

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



(TOP VIEW)



①NC
②ANODE
③CATHODE
④NC
⑤EMITTER
⑥Vo
⑦BASE
⑧Vcc

PHOTOCOUPLER P2821

ELECTRICAL CHARACTERISTICS (Ta = 25°)

	Parameters	Symbols	Conditions	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	$I_F = 16mA$	–	1.6	2.1	V
	Reverse Current	I_R	$V_R = 5V$	–	–	10	μA
	Terminal Capacitance	C_t	V = 0, f = 1MHz	–	50	–	pF
	Forward Voltage Temp. Coefficient	$\Delta V_F/\Delta T$	IF = 16mA	–	−2.8	–	mV/°C
Output	High Level Output Current	I_{OH}	$V_{CC} = V_O = 5.5V$, $I_F = 0$	–	–	0.5	μA
			$V_{CC} = V_O = 15V$, $I_F = 0$	–	–	100	μA
Transfer Characteristics	Exchange Efficiency	CTR	$V_{CC} = 4.5V$, $I_F = 16mA$, $V_O = 0.4V$	10	20	–	%
	Low Level Output Voltage	V_{OL}	$V_{CC} = 4.5V$, $I_F = 16mA$, $I_O = 2.4mA$	–	–	0.4	V
	Low Level Supply Current	I_{CCL}	$V_{CC} = 15V$, $I_F = 16mA$, V_O = open	–	70	–	μA
	High Level Supply Current	I_{CCH}	$V_{CC} = 15V$, $I_F = 0$, V_O = open	–	–	1.0	μA
	Isolation Resistance	R_{ISO}	RH40 ~ 60%, V = 500V	5×10^{10}	–	–	Ω
	Input-Output Capacitance	C_f	V = 0, f = 1MHz	–	0.8	5	pF
	H→L Propagation Delay Time (1)	t_{PHL}	$V_{CC} = 5V$, $I_F = 16mA$ $R_L = 1.9k\Omega$	–	0.3	1.2	μs
	L→H Propagation Delay Time (1)	t_{PLH}		–	0.3	1.2	μs

(1) Measuring Circuit for Propagation Delay Time

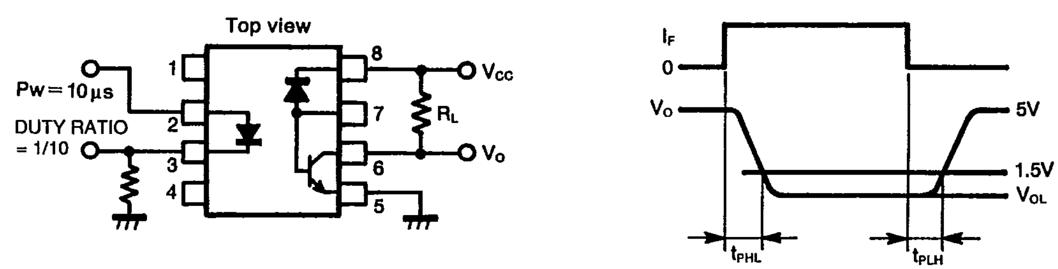


Figure 2: LED Allowable Power Dissipation vs. Temperature

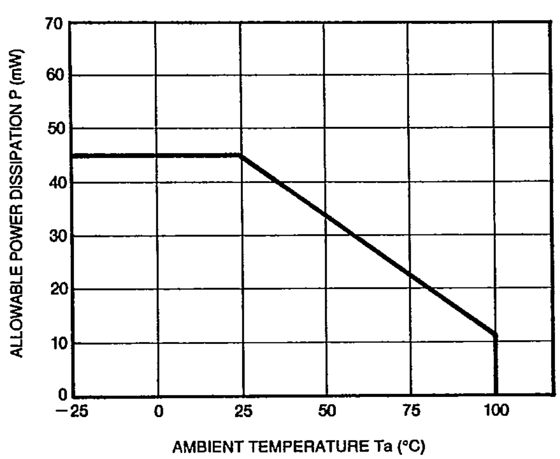


Figure 3: Collector Allowable Power Dissipation vs. Temperature

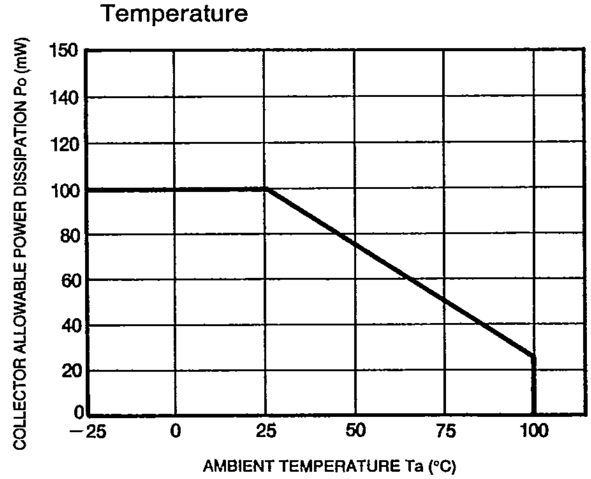


Figure 4: Forward Current vs. Forward Voltage

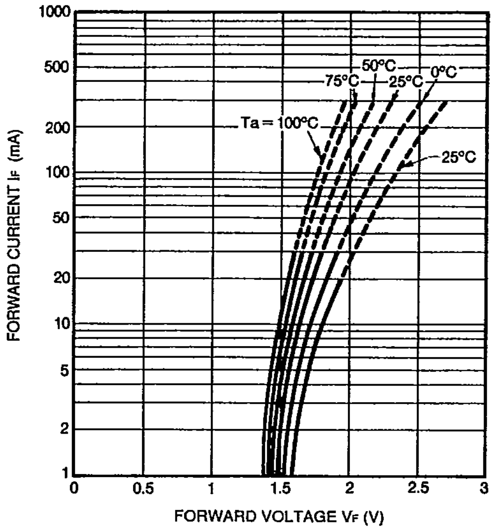


Figure 5: Output Current vs. Forward Current

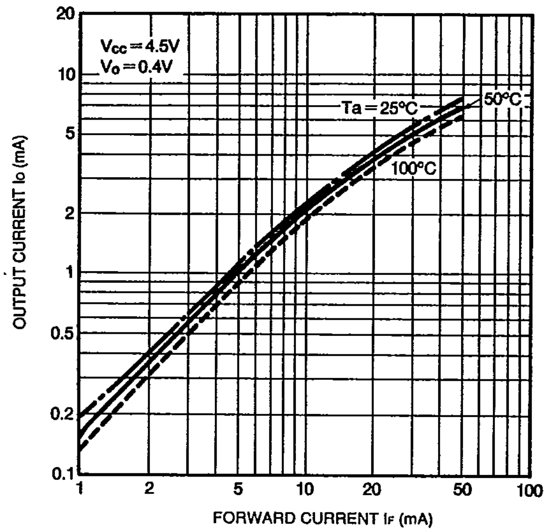


Figure 6: Output Current vs. Output Voltage

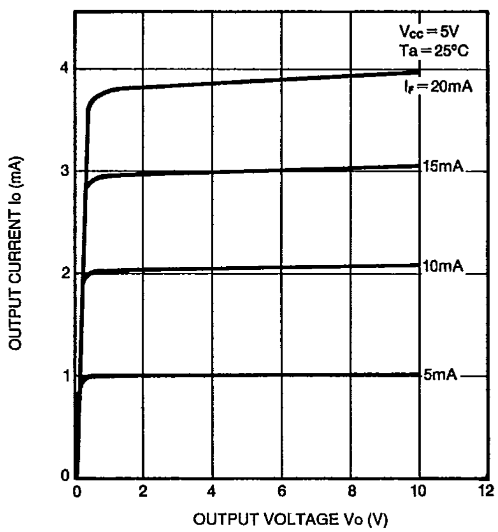


Figure 7: Output Voltage vs. Forward Current

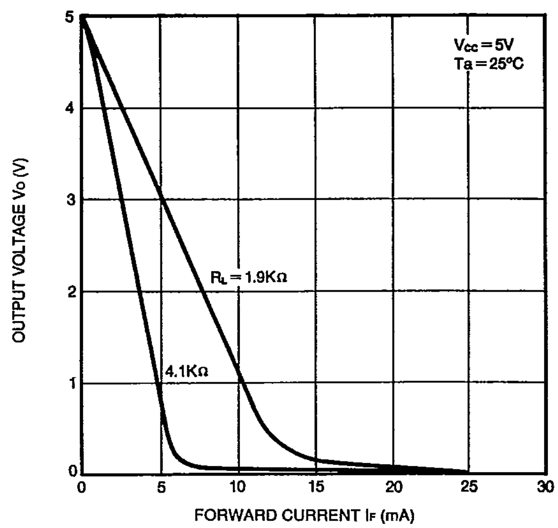


Figure 8: High Level Output Current vs. Temperature

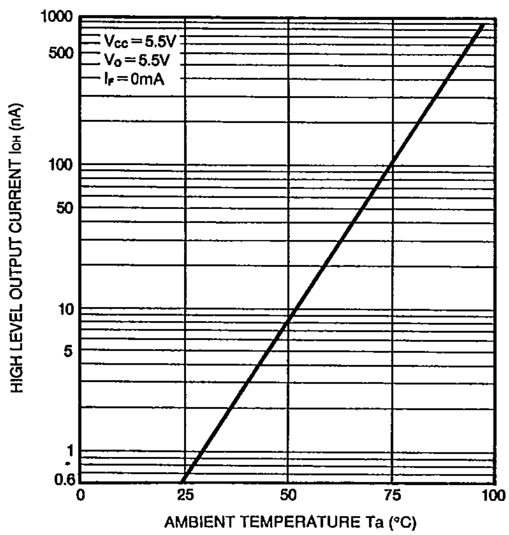


Figure 9: Current Transfer Ratio vs. Temperature

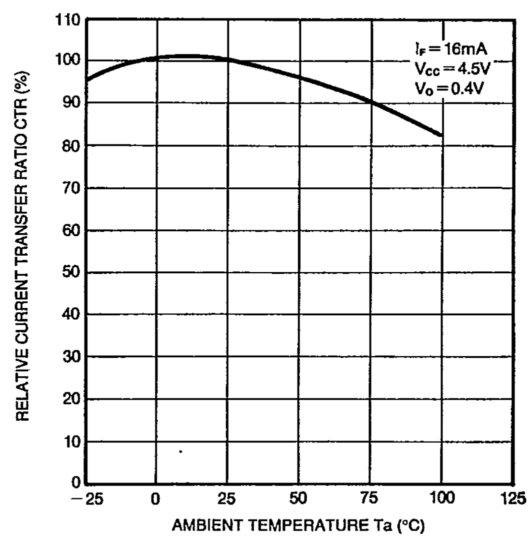


Figure 10: Propagation Delay Time vs. Load Resistance