

*7010
1830 P
030185*

**RS
data**

OE-14

1500

**Light activated
switches**

R S COMPONENTS LTD

T-65-09

Stock numbers **305-327**
305-434

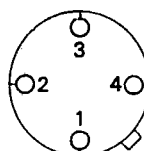
Highly versatile integrated circuit devices incorporating a silicon planar photodiode with TTL output (5 V type) and MOS output (15 V type), also TTL compatible. Both devices are sensitive to a wide range of light sources, e.g. led's, tungsten lamps, sunlight and are packaged in a four lead TO-18 metal can with window.

Applications

Logic driving	Automatic door opening
Batch counter	Daylight/night switch for street laterns
Burglar alarm	Light coupled isolator

Absolute maximum ratings

	5 V type	15 V type
Maximum power dissipation @ 25 °C	115 mW	120 mW
Working temperature range (ambient)	0 °C to +70 °C	-55 °C to +85 °C

Pin connections(view from
pin side)

Pin	5 V type 305-434	15 V type 305-327
1	Supply +ve	Sensitivity control
2	Sensitivity control	Output
3	Supply -ve	Supply +ve
4	Output	Supply -ve

Outputs HIGH when illuminated

Note: | Can connected to Pin 3

Electrical characteristics

Parameter	Test conditions	5 V type 305-434			15 V type 305-327			Units
		Min	Typ	Max	Min	Typ	Max	
V_{CC} Supply voltage	Working range	4.75	5.0	5.25	15		20	V
	TTL Compatible	4.75	5.0	5.25	16	17	18	V
I_{CC} Supply current	Zero output current		16	22		1.1	2	mA
	15 V							
V_{OH} High level output voltage	$I_o = 1 \text{ mA}, V_{CC} = 17 \text{ V}$	2.4				16.75		V
V_{OL} Low level output voltage	$I_o = 0.1 \text{ mA}, V_{CC} = 17 \text{ V}$			0.4		8.3		V
I_{OH} High level output current	$V_o = 12 \text{ V}, V_{CC} = 17 \text{ V}$		0.12		16	29		mA
I_{OL} Low level output current	$V_o = 12 \text{ V}, V_{CC} = 17 \text{ V}$	-10			-2.5	-4.4		mA

Sensitivity *	2870 °K tungsten source	10^4		10	10^4		10	$\mu\text{W}/\text{cm}^2$
Sensitivity adjustment	External R	2		10^2	10^2		10^3	k Ω
(see circuit applications)	External C	15×10^2		15×10^4	50		10^5	pF
Peak spectral response			850			750		nm
Hysteresis			15			1		%

Switching characteristics

Propagation delay time #			0.5		0.005		50	ms
Switching frequency				50	0.01		100	kHz

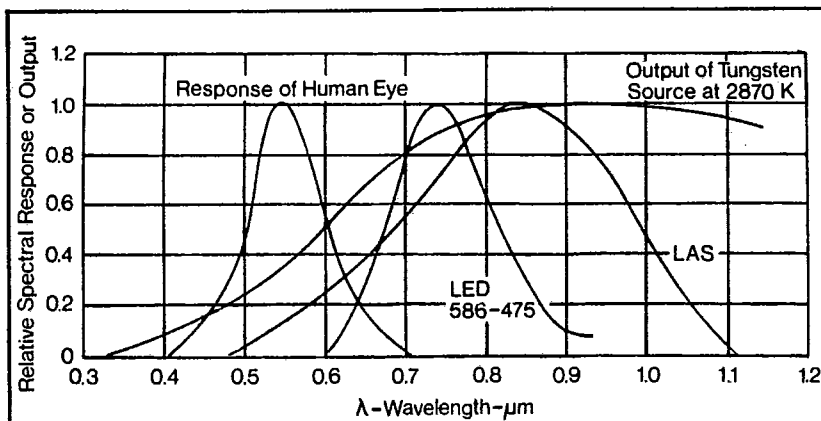
Notes: * Light Sources: (Approx. irradiation at a distance of 10 cm)
Propagation delay time will vary with external R and C used
—longer delays for higher RC product.

Source
1.2 watt MES 586-201
LED 586-447

Irradiation (Sensitivity)
1200 $\mu\text{W}/\text{cm}^2$
400 $\mu\text{W}/\text{cm}^2$

RS data

Relative spectral response



Note

Light level at which devices switch is set by time constant of external RC (see table overleaf). Large values of RC give high sensitivity. Outputs go high with increase in incident light at threshold point.

Applications

Figure 1 **Direct TTL driver circuits**

Recommended R & C values shown.
For full range see table overleaf.

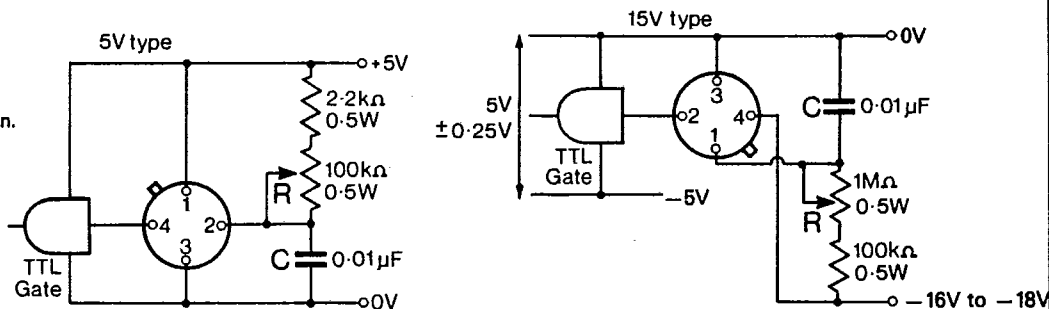


Figure 2 **Light operated relay**

Note use internal diode as shown,
otherwise connect a 1N4148
externally.

NOTE 15V type will also operate
transistor relay 349-254

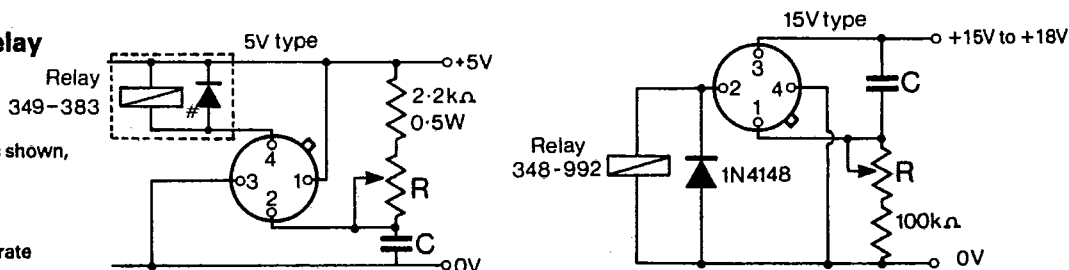


Figure 3 **Light operated solid state switch**

* using BTX-18-400 with heat sink
401-548; max load current
500 mA @ Tamb = 50°C

