MECHANICAL DATA

Bulb	See Drawing
Base	Modified E9-37
Basing	See Drawing
Mounting Position	Any

ELECTRICAL DATA

RATINGS (Absolute Maximum)

AC Supply Voltage	1000 Volts	Max.
Tube Current (Average)	10 Ma	Max.
Temperature Range	−20 to +100 °C	

AVERAGE OPERATING CHARACTERISTICS

Illumination	Candle Flame Approx. 4 to 5 Inches from Tube
AC Supply Voltage (RMS at 50/60 Cycles)	500 ± 50 Volts
Tube Voltage Drop	300 ± 15 Volts
Tube Current (Average)[1]	6 Ma
Sensitivity Range	1900 to 2900 Angstroms
Wave Length of Max. Sensitivity	2400 Angstroms
Background Noise (Cosmic Radiation at Sea Level)	1 PPM Max.

NOTE:

1. *Measured by moving coil instrument and bridge rectifier with Germanium diodes.*

APPLICATION DATA

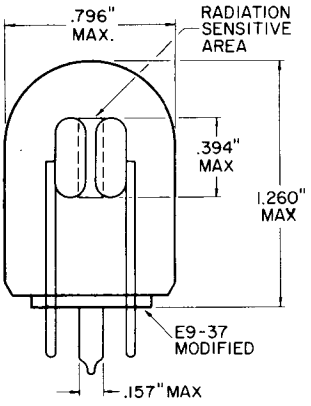
The ultraviolet-sensitive phototube P-568 is a gas filled electron tube. It consists of two symmetrically arranged electrodes, which are sealed into a bulb of special ultraviolet transmitting glass. This photocell operates on alternating voltage. If electromagnetic radiation from the ultraviolet part of the spectrum between approx. 1900 and 2900 angstroms hits an electrode which for the moment is negative, photoelectrons will be released from the metal surface. This effect is obtained by a special treatment of the electrodes. As soon as the instantaneous value of the voltage is high enough, an ionization process will be initiated in the space between the electrodes caused by the electrons which are accelerated towards the positive electrode. This ionization process releases a gas discharge. Thus the tube will become conductive as long as the voltage during the considered half-cycle lies above the quenching voltage for the gas discharge. The discharge is quenched at the end of the half cycle. During the subsequent half cycle the other electrode emits photoelectrons in the same way, provided that the radiation continues. As soon as the ignition voltage is reached another gas discharge takes place. If the intensity of the radiation is high enough, the tube ignites during each half cycle, i.e., a state of saturation is obtained, which corresponds to a constant maximum value of the alternating current flowing through the tube. Its height is dependent upon the outer limiting resistor and upon the frequency of the applied voltage.

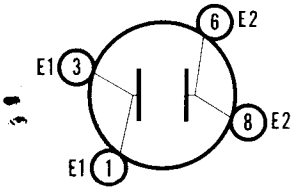
The high sensitivity of the tube to ultraviolet radiation may be realized from the fact that the UV portion of the radiation of an ordinary candle flame located a few inches from the tube is sufficient to saturate it. This photocell is blind to visible light and to UV radiation with a wave length above appriximate 2900 angstroms. The tube therefore represents an extremely sensitive flame detector. The high output current makes it possible to operate relays directly.

If the tube is used for quantitative measurements of radiation intensities, the frequency of the operating voltage must be so high that even with the highest intensity to be measured the state of saturation will not be reached.

QUICK REFERENCE DATA

The Sylvania Type P-568 is a gas filled phototube, sensitive only to ultraviolet radiation of wave lengths between 1900 and 2900 angstroms. It consists of two symmetrically arranged electrodes, sealed in an ultraviolet transmitting glass bulb. An output current of 6 Ma is readily obtainable for direct relay operations. Applications include flame detector for furnace control, fire detection, and ultraviolet radiation detection and measurements.





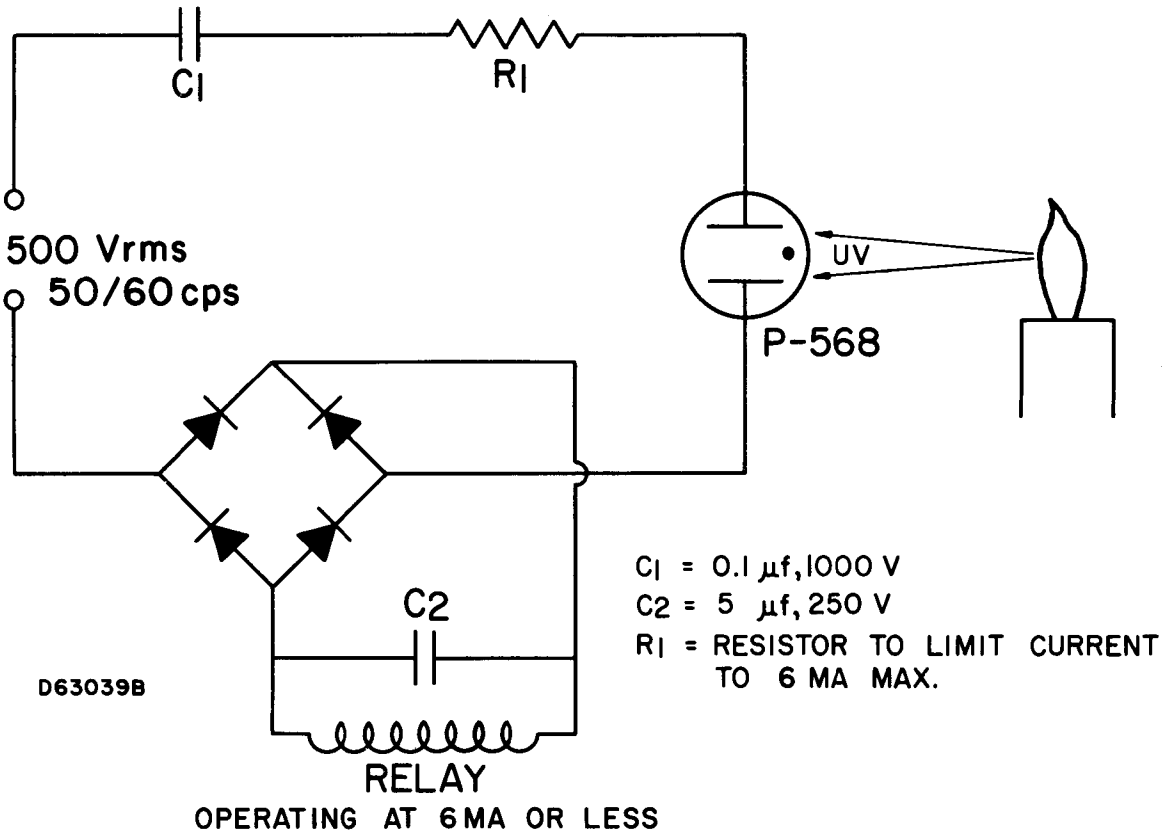
SYLVANIA ELECTRIC PRODUCTS INC.

INTERNATIONAL DIVISION
NEW YORK, N. Y.

A Technical Publication
NOVEMBER, 1964

File Under
PHOTOCONDUCTORS

AC OPERATED CONTROL CIRCUIT



C1 = 0.1 µf, 1000 V
C2 = 5 µf, 250 V
R1 = RESISTOR TO LIMIT CURRENT TO 6 MA MAX.