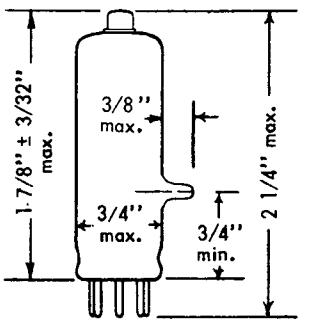
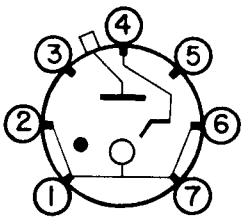
Excellence in Electronics

TYPE CK6174

The CK6174 is an instant starting, cold cathode, gas-filled, half-wave rectifier of miniature construction. Several tubes may be operated in cascade to produce very high voltages. Typical applications include electronic photo-flash devices, fence controllers, and oscilloscopes. The CK6174 should be used as a replacement in this type of equipment, originally designed to use the former type CK1013, and in new equipment having output currents up to 3 ma. The tube has a starter electrode which enables it to fire at the ignition voltages indicated in the ratings below.





BOTTOM VIEW

5BU

MECHANICAL DATA

ENVELOPE: T-5½ Glass

BASE: Miniature Button 7-Pin

TOP CAP: Skirted Miniature

TERMINAL CONNECTIONS:

Pin 1 Cathode	Pin 5 No Connection ▲
Pin 2 Cathode	Pin 6 Cathode
Pin 3 No Connection ▲	Pin 7 Cathode
Pin 4 Starter Electrode	Top Cap Anode

MOUNTING POSITION: Any

ELECTRICAL DATA

RATINGS - ABSOLUTE MAXIMUM VALUES:

Peak Inverse Voltage	2800	volts
Peak Cathode Current (Steady State) ♦	30	ma
Peak Cathode Current (surge) ♦	300	ma
Average Cathode Current (dc)	3	ma
Maximum Anode Supply Voltage (peak)	1700	volts
Minimum Anode and Starter Electrode Supply Voltage (RMS) ●	550	volts
Minimum Anode Supply Impedance	20,000	ohms
Maximum Average Starter Electrode Current (Starter Electrode Operating as a Cathode) ■	125	μa.
Maximum Peak Starter Electrode Current (Starter Electrode Operating as a Cathode) ■	300	μa.
Ambient Temperature Range	-50 to +60	°C

CHARACTERISTICS AND TYPICAL OPERATION - HALF-WAVE RECTIFIER 60~ SINUSOIDAL OPERATION:

Anode Supply Voltage (RMS)	1200	volts
Anode Supply Impedance	20,000	ohms
Starter Electrode Limiting Resistance	10	meg.
Load Current (dc)	3	ma
Approximate Anode to Cathode Drop	100	volts
Load Condenser	0.2	μf
Load Resistor	0.4	meg.

▲ *The socket terminals for pins 3 and 5 cannot be used as tie point terminal lugs and may not be connected to any other point in the circuit except to the cathode.*

♦ *To avoid damage to the equipment or tube, it is recommended that the anode supply impedance be adjusted to limit forward currents and intermittent reverse peak currents to stated values. Minimum resistance is 20,000 ohms minus the effective equivalent transformer impedance, but never less than 2000 ohms dc resistance. For voltage multiplier circuits, a separate limiting resistor should be connected in series with the anode or the cathode of each tube. In the event of a reverse arc, the absence of a surge limiting resistor causes all of the energy of the filter condenser to be dissipated in the tube.*

● *With starter electrode connected to anode through 10 megohms of resistance. The starter electrode connection may be omitted in extremely low current supplies (dc output currents up to 100 microamperes) to eliminate the reverse ionization current through the starter electrode circuit. It is recommended that this "floating" starter electrode connection be confined to high resistance transformer circuits, such as vibrator supplies, where a high peak open circuit voltage will insure the ignition of the anode circuit. Normally, the starter electrode must be used on sinewave voltage sources. The minimum anode and starter electrode supply voltage rating above does not apply to the "floating" starter electrode condition.*

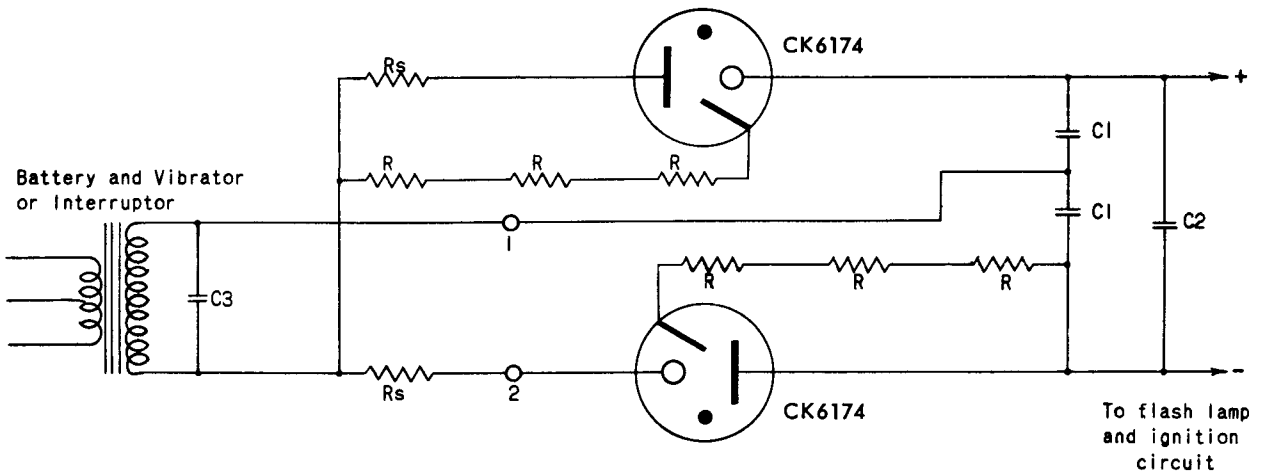
■ *With the starter electrode connected to operate as an anode on the forward half of the cycle, the cathode current rating is the only limitation on the starter electrode current.*

Tentative Data

RAYTHEON

COLD CATHODE HALF - WAVE RECTIFIER

CIRCUIT FOR BATTERY OPERATION OF ELECTRONIC PHOTO-FLASH



R= 3.3 meg. 1/2 watt 350 Vdc

Rs= Surge Resistor. Adjust to keep Peak Cathode Current (steady state) and Peak Cathode Current (surge) within ratings of 30 ma. and 300 ma., respectively. Rs should not be less than 2000 ohms in voltage doubler circuits regardless of transformer characteristics.

C1= 0.1 μf 1500 V

C2= 28 μf 2500 V

C3= Buffer Condenser 0.002 to 0.01 μf. The exact value depends on vibrator or interrupter frequency and transformer characteristics and represents a compromise between excessive transformer loading and excessive inverse voltage.