

# AMPEREX TUBE TYPE ZC1031



## ADVANCE DATA

Very small ruggedized cold cathode neon-filled trigger tube for use in shift registers for moving displays. The tube has a pure molybdenum cathode to ensure stable characteristics and long life expectancy.

### CHARACTERISTICS AND CIRCUIT DESIGN VALUES

#### Priming Conditions:

Minimum anode to primer supply voltage	$V_{ba-pr}$	180 volts
Anode to primer maintaining voltage	$V_{m-pr}$	130-145 volts
Recommended primer resistance (at $V_{ba-pr} = 180$ volts)	$R_{pr}$	10 megohms
Primer Current	$I_{pr}$	5-15 $\mu$ a

### ANODE AND TRIGGER CHARACTERISTICS

Anode to cathode maintaining voltage (at 3 ma)	$V_m$	108-115 volts
Trigger to cathode ignition voltage	$V_{t-ign} = \text{min.}$	145 volts
at: $V_{ba} = 180$ volts	$V_{t-ign} = \text{max.}$	180 volts
$C_{t-k} = 100$ pf		
Maximum anode to cathode voltage	$V_{a-k} = \text{max.}$	320 volts
Minimum anode to cathode voltage	$V_{a-k} \text{ min at } C_t =$	
(effective pulse voltage on trigger 180 volts)	150 V at 33 pf	
	145 V at 56 pf	
	140 V at 100 pf	

Light output at 3 ma measured at 40 inches from the top of the tube (Weston cell corrected for eye sensitivity)

$\approx .0018$  foot candles

### EXTINCTION CHARACTERISTICS (See Figure 1)

Maximum permissible anode to cathode voltage after extinction (at  $I_k = 3$  ma prior to extinction)  
this function is valid for  $70 \text{ V} \leq v_{a-k} \leq 275 \text{ V}$   $v_{a-k} = 60 + 220 (1 - e^{-t/60})$  volts

Maximum permissible anode to trigger voltage after extinction (at  $I_k = 3$  ma prior to extinction)  
this function is valid for  $95 \text{ V} \leq v_{t-k} \leq 300 \text{ V}$   $v_{a-t} = 85 + 220 (1 - e^{-t/60})$  volts  
(t in  $\mu$ s after extinction)

# ZC1031

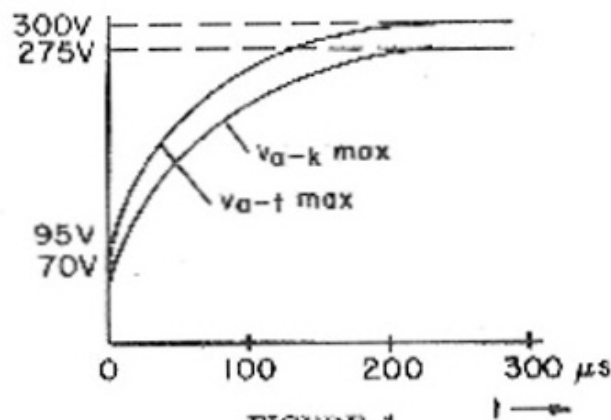
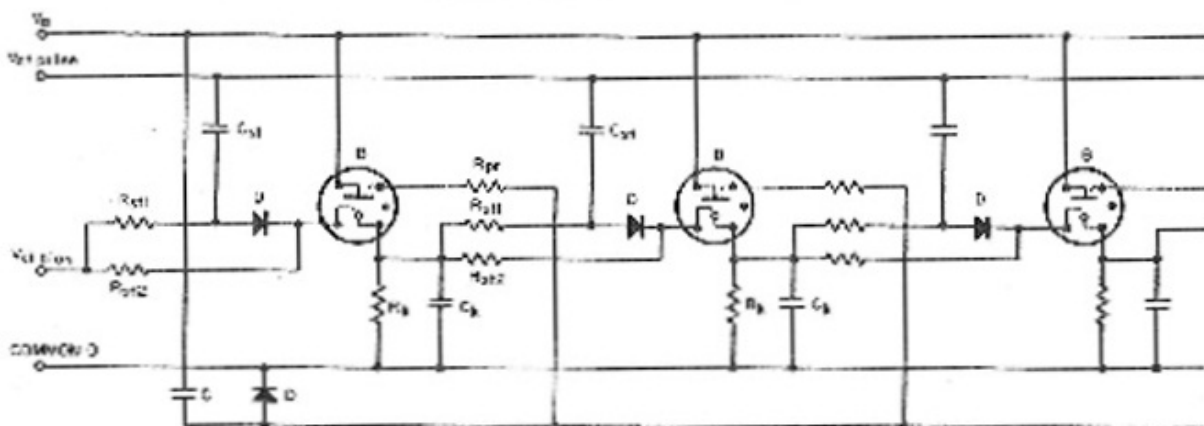


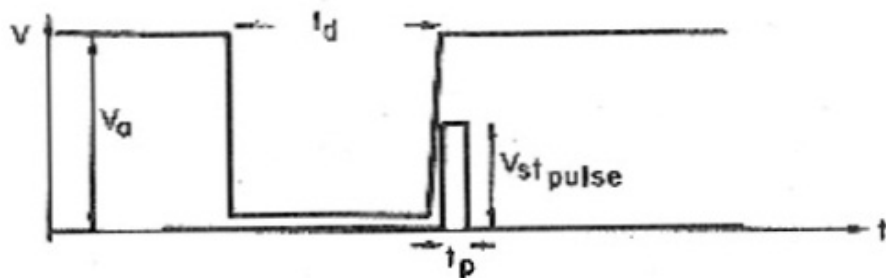
FIGURE 1

## Typical Shiftregister with ZC1031



Parts List:	Value	Tolerance	Power
$R_k$	36 Kohm	$\pm 10\%$ (e.o.l.)	1/2 watt
$R_{pr}$	10 Megohms	$\pm 20\%$ (e.o.l.)	1/8 watt
$R_{st1}$	1 Megohm	$\pm 10\%$ (e.o.l.)	1/4 watt
$R_{st2}$	18 Megohms	$\pm 20\%$ (e.o.l.)	1/8 watt
$C_{st}$	1, 2 nf	$\pm 20\%$ (e.o.l.)	
$C_k$	220 pf		
C	220 nf		
D	BYX 10		
B	ZC1031		

## Anode Pulse Time Diagram:

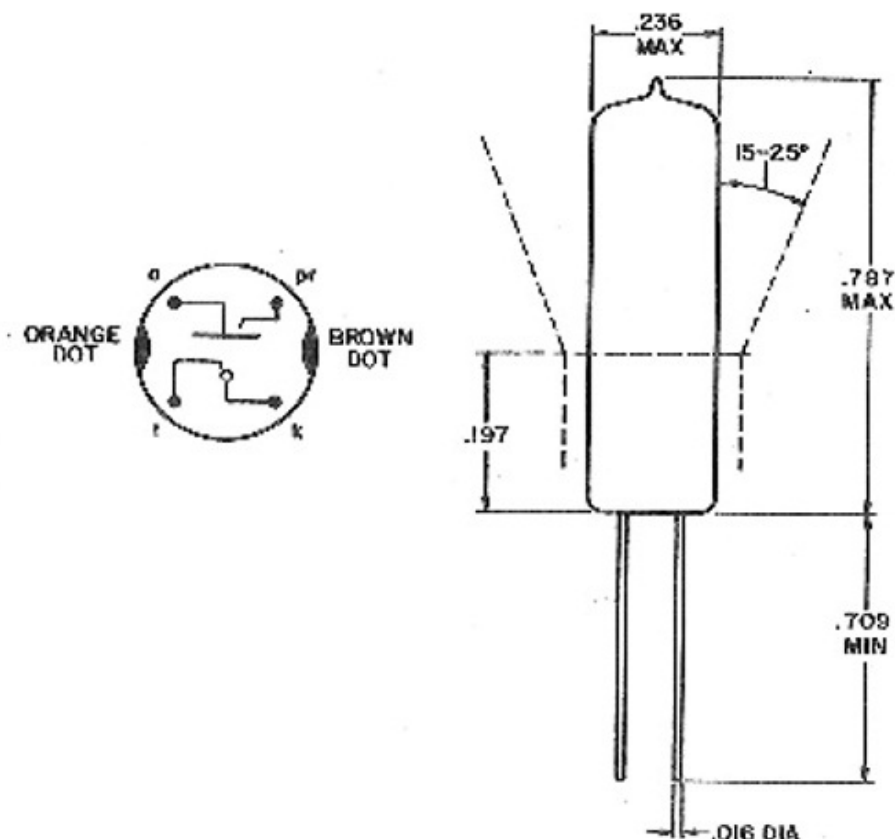


$V_a$	220 V $\pm 5\%$
$t_d$ min	150 $\mu s$
$t_d$ max	200 $\mu s$
$V_{st\ pulse}$	125 V $\pm 5\%$
$t_p$ min	10 $\mu s$
$t_p$ max	20 $\mu s$
$V_{st\ bias}$	100 V

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## DIMENSIONS AND CONNECTIONS

Dimensions in inches



## MOUNTING

The tube may be soldered directly into the circuit but heat conducted to the glass should be kept to a minimum by the use of a thermal shunt.

The leads may be dip-soldered to a minimum of 0.2 inches from the glass to metal seals at a solder temperature of 240°C for a maximum of 10 seconds.

Care should be taken not to bend the leads nearer than 0.059 inches from the seals.

Primer and trigger circuit resistors should be mounted close to the tube to avoid stray capacitances.

The tube should not be mounted close to conductors or components which give rise to strong electrical fields.