

**OBJECTIVE  
TECHNICAL INFORMATION**

These ratings represent the design objective for this product. Refer to the Preliminary Technical Information sheet for ratings currently achieved in the progression towards design objectives. If PTI sheets do not exist, consult your local Tube Department Regional Sales Office.

DEVELOPMENTAL  
TYPE

ZP-1034  
OTI-88  
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3-15-64

*This technical information is proprietary and is furnished only as a service to customers.*

ZP-1034

TETRODE

Pulsed Service  
Grounded-Grid Operation

Water Cooled  
Metal and Ceramic

Integral Water Jacket

The ZP-1034 is a small-size, four-electrode transmitting tube especially designed for pulsed-amplifier service at L-band frequencies. This tetrode is particularly well suited for use in ground-based equipment such as steerable array radar.

The tube is capable of providing useful output at frequencies up to approximately 1500 megacycles.

Features of the ZP-1034 include long life and reliability, long pulse width, high gain and broad-banding capability.

These together with such design factors as an oxide-coated cathode, coaxial elements, and metal-ceramic construction make the tube well adapted to application in modern systems where performance and reliability are important.

**ELECTRICAL**

	Minimum	Bogey	Maximum	
Heater Voltage . . . . .	6.0	6.3	6.8	Volts
Heater Current . . . . .	--	5.5	--	Amperes
Amplification				
Factor, G <sub>2</sub> to G <sub>1</sub> . . . . .	--	10.5	--	
E <sub>g2</sub> = 275 Volts DC, E <sub>b</sub> = 1000 Volts DC, I <sub>b</sub> = 200 Milliampere DC				
Cathode Heating Time . . . . .	1	--	--	Minute
Direct Interelectrode Capacitances*				
Cathode to Plate † . . . . .	--	0.012	--	uuf
Input . . . . .	--	24.0	--	uuf
Output . . . . .	--	9.8	--	uuf

**MECHANICAL**

Mounting Position - Any				
Net Weight, approximate . . . . .			13	Ounces

**THERMAL**

Cooling - Water and Forced Air $\phi$				
Water Flow				
Anode . . . . .			0.5	Minimum Gallons per Minute
Outlet Temperature . . . . .			70	Maximum C

THERMAL (Cont'd.)

Air Flow

Anode Ceramic, approximate . . . . .	1	Cubic Foot per Minute
Screen and Control Grid, approximate . . . . .	1	Cubic Foot per Minute
Heater and Cathode, approximate . . . . .	1	Cubic Foot per Minute
Ceramic Temperature at any Point . . . . .	200	Maximum C

RADIO-FREQUENCY POWER AMPLIFIER - CLASS C

Maximum Ratings

Pulsed Drive, 1300 Megacycles

DC Plate Voltage . . . . .	4	Kilovolts
DC Plate Current, during pulse . . . . .	6	Amperes
DC Grid-No. 2 Voltage . . . . .	1.1	Kilovolts
DC Grid-No. 2 Input # . . . . .	5	Watts
DC Grid-No. 1 Voltage . . . . .	-225	Volts
DC Grid-No. 1 Current . . . . .	1.5	Amperes
Plate Dissipation # . . . . .	750	Watts
Pulse Width ** †† . . . . .	15	Microseconds
Duty Factor ** ∅∅ . . . . .	0.01	

Typical Operation

Grounded-grid Circuit at 1300 Megacycles,  $\lambda/4$  Output Circuit

DC Plate Voltage ## . . . . .	4.0	Kilovolts
DC Plate Current during pulse . . . . .	3.5	Amperes
DC Grid-No. 2 Voltage . . . . .	750	Volts
DC Grid-No. 2 Current, during pulse . . . . .	75	Milliamperes
DC Grid-No. 1 Voltage . . . . .	-150	Volts
DC Grid-No. 1 Current, during pulse . . . . .	150	Milliamperes
Driving Power at Tube, during pulse . . . . .	750	Watts
Power Output, during pulse (useful) . . . . .	7.5	Kilowatts
Pulse Width †† . . . . .	15	Microseconds
Duty Factor . . . . .	0.01	

\* Control grid connected directly to screen grid.

† Complete external shielding between cathode and plate.

∅ Water and forced air cooling to be applied during the application of any voltages.

# Maximum average value.

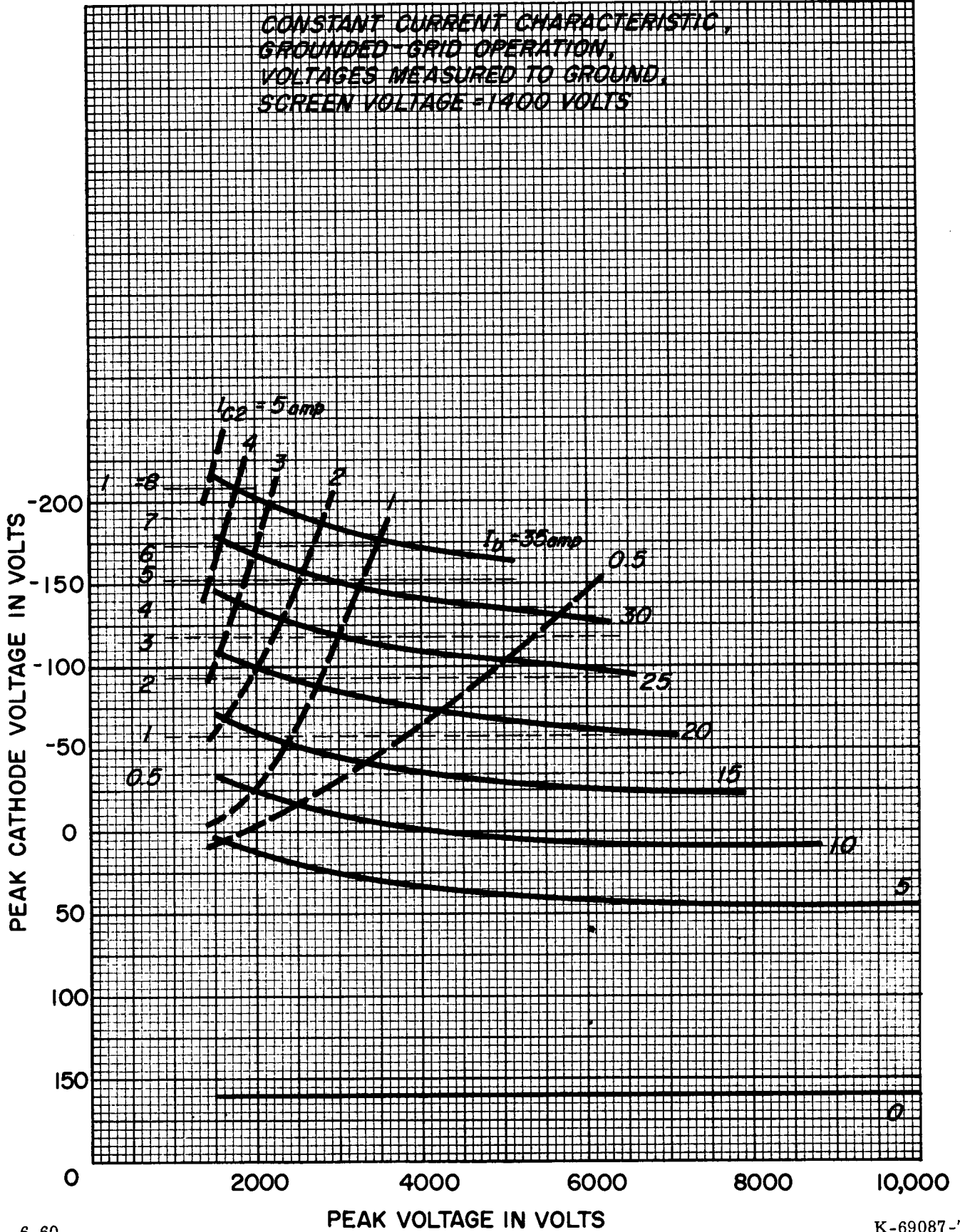
\*\* For applications that require longer pulses or higher duty refer to the tube manufacturer for recommendations.

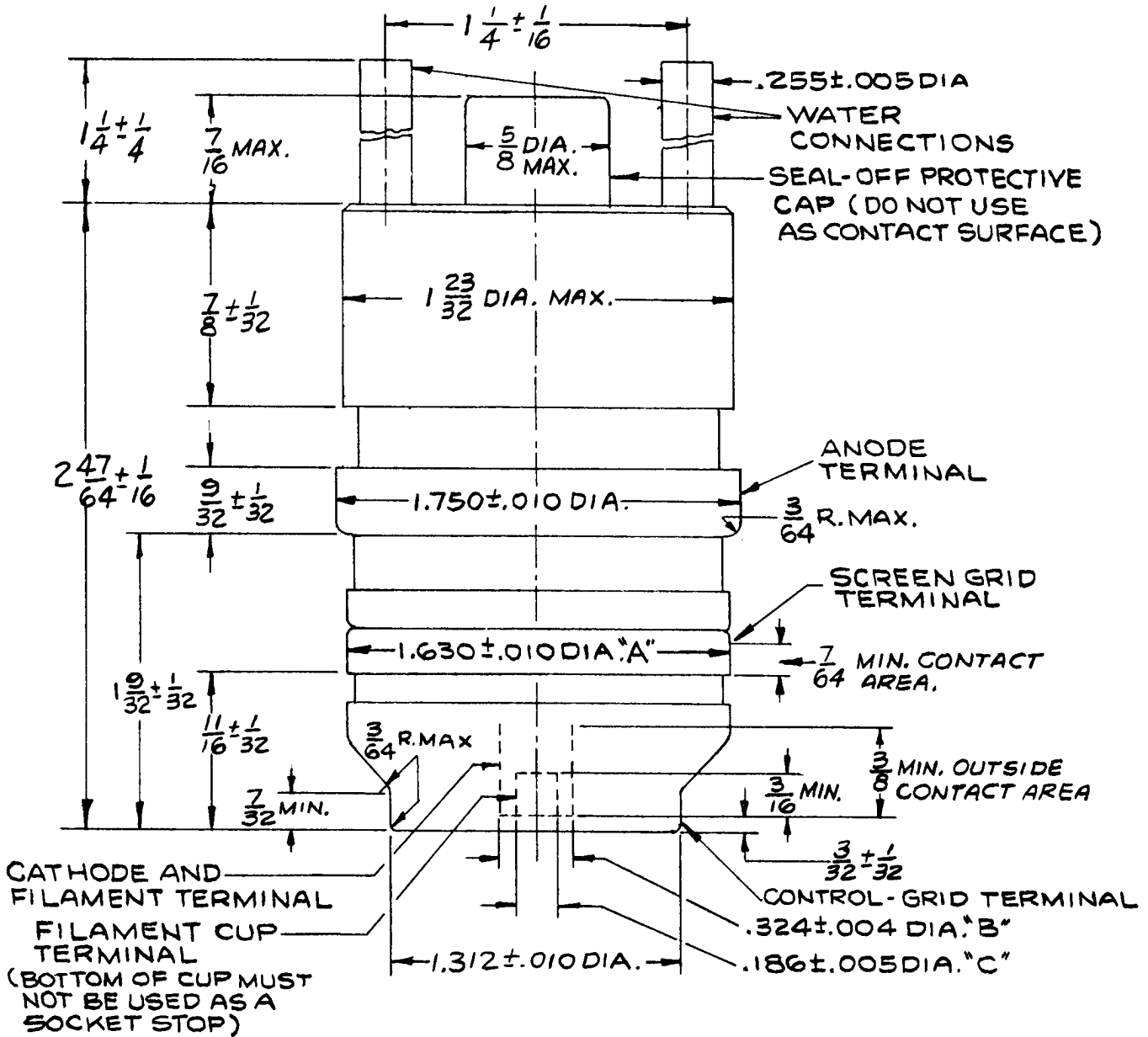
†† Pulse duration measured between points at 70 percent of peak value. The peak value is defined as the maximum value of a smooth curve through the average of the fluctuations over the top portion of the pulse.

∅∅ Maximum ratio of on-time to elapsed time during any 1.5-millisecond period.

## A minimum surge-limiting resistance of 50 ohms must be placed between the plate of the tube and the B+ power supply at steady-state voltages greater than 3.5 kilovolts.

CONSTANT CURRENT CHARACTERISTIC,  
GROUNDED-GRID OPERATION,  
VOLTAGES MEASURED TO GROUND,  
SCREEN VOLTAGE = 1400 VOLTS





CONCENTRICITIES: The following total indicator readings are measured with respect to a centerline determined by the centers of the anode terminal and control grid terminal.

- Diameter A - 0.016 inches
- Diameter B - 0.036 inches
- Diameter C - 0.042 inches

Total indicator reading of filament cup terminal diameter (C) measured with respect to center of cathode and filament terminal diameter (B) - 0.016 inches.