8808

High-Mu Triode

NUVISTOR TYPE

For Cathode-Drive, Low-Level Class-C RF-Power-Amplifier, Oscillator, or Frequency-Multiplier Applications to 1.2 GHz

ELECTRICAL CHARACTERISTICS - Bogey Values

Heater Voltage, dc or ac	E_h	6.3	V
Heater Current at E_h = 6.3 V.	I_h	340	mA
Direct Interelectrode Capacitances:			
Without external shield			
Input: K to (G, S, H)	c_i	9.6	pF
Output: P to (G, S, H)	c_o	2.7	pF
Heater to cathode	c_{hk}	2.6	pF
Plate to cathode	c_{pk}	0.050	pF

For the following characteristics, see Conditions below:

Amplification Factor	μ	100	
Plate Resistance (Approx.) ..	r_p	6400	Ω
Transconductance	g_m	18000	μmho
DC Plate Current	I_b	15	mA
Cutoff DC Grid Voltage for I_b = 10 μA	$E_{c(co)}$	-5	V

Conditions

Heater Voltage	E_h	6.3	V
Plate Supply Voltage	E_{bb}	200	V
Grid Supply Voltage	E_{cc}	0	V
Cathode Resistor	R_k	68	Ω

MECHANICAL CHARACTERISTICS

Dimensional Outline	See Outline Drawing
Maximum Overall Length (l_m)	0.985 in
Maximum Seated Length (l_{sm})	0.780 in
Maximum Diameter (d_m)	0.440 in
Envelope	JEDEC Designation MT4
Top Cap[a]	Small (JEDEC Designation C1-46)

Base[a]	Medium-Ceramic-Wafer Twelvar 6-Pin (JEDEC Designation E6-93)
Type of Cathode	Coated Unipotential
Operating Position	Any
Cooling	Conduction

MAXIMUM RATINGS - Absolute-Maximum Values[b]

For operation as a low-level class-C rf-power-amplifier, oscillator, or frequency-multiplier tube at frequencies up to 1.2 GHz

		ICAS[c]	
Plate Supply Voltage (E_{bb})			
Up to 50,000 feet		1000[d]	V
Above 50,000 feet	See *Breakdown-Voltage Characteristics*		
DC Plate Voltage	E_b	1000	V
Grid Voltage:			
Peak	e_c	30	V
DC	E_c	+0	V
		-100	V
Peak Heater-Cathode Voltage	e_{hk}	±100	V
Heater Voltage, dc or ac	E_h	5.7 to 6.9	V
Peak Cathode Current	i_k	1000	mA
		See *Pulse-Rating Chart*	
Average Cathode Current	I_k	75	mA
Plate Dissipation	P_b	6[e]	W
Grid Dissipation	P_g	200	mW
		See *Grid-Dissipation Rating Chart*	
Envelope Temperature[f]	T_E	200	°C

MAXIMUM CIRCUIT VALUES

		ICAS	
Grid-Circuit Resistance:	R_g		
For fixed-bias or cathode-bias operation:		50	kΩ
		See *Grid-Circuit-Resistance Rating Chart*	

TYPICAL OPERATION - CCS[g]

As cathode-drive rf power amplifier

Frequency	f	1	GHz
Heater Voltage	E_h	6.3	V
DC Plate-to-Grid Voltage	E_{bg}	206	V

DC Cathode-to-Grid Voltage ..	E_{kg}	5.8	V
From grid resistor of	R_g	300	Ω
Average Plate Current	I_b	50	mA
Average Grid Current	I_c	19	mA
Driving Power (Approx.)	P_g	1.0	mW
Useful Power Output (Approx.)	P_o	5	W

As cathode-drive frequency doubler

Output Frequency	f_o	1.2	GHz
Heater Voltage	E_h	6.3	V
DC Plate-to-Grid Voltage.....	E_{bg}	200	V
DC Cathode-to-Grid Voltage..	E_{kg}	11	V
From grid resistor of	R_g	1000	Ω
Average Plate Current	I_b	38	mA
Average Grid Current	I_c	10.5	mA
Driving Power (Approx.)	P_g	1	W
Useful Power Output (Approx.).	P_o	2	W

TYPICAL OPERATION

As pulsed cathode-drive class-C amplifier

Output Frequency	f_o	1	1	GHz
DC Plate-to-Grid Voltage	E_{bg}	500	1000	V
DC Cathode-to-Grid Voltage ...	E_{kg}	16	20	V
Average Plate Current	I_b	9	4.75	mA
Average Grid Current	I_c	5.5	1.4	mA
Duty Factor	-	2.5	1	%
Pulse Length	-	5	5	μs
Peak Driving Power	-	30	50	W
Average Driving Power	-	0.75	0.5	W
Peak Useful Power Output (Approx.)	-	105	240	W
Average Power Output	-	2.5	2.4	W
Plate Dissipation (Approx.) ..	-	2.4	2.7	W
Gain.....	-	5.4	6.8	dB

[a] See *Socket and Connector Information.*

[b] As defined in the current issue of EIA Standard RS-239.

[c] Intermittent Commercial and Amateur Service.

[d] Under no circumstances should this absolute-maximum value be exceeded. For high-altitude operation, the maxi-

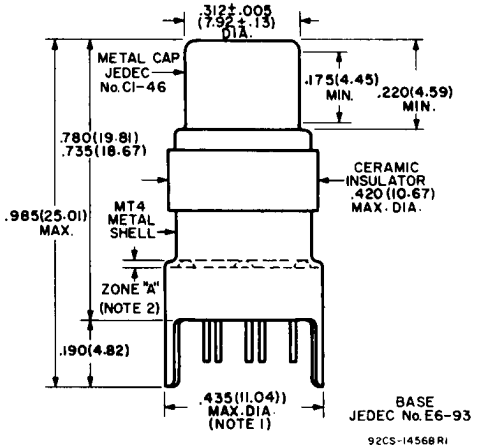
mum permissible plate voltage is dependent on atmospheric pressure.

[e] This rating applies when the plate-seal temperature is maintained below 200°C by means of an external heat sink such as the center conductor of a coaxial resonator. If no provision is made for additional heat removal, the maximum seal temperature of 200°C will not be exceeded with 4 watts of plate dissipation and a chassis temperature of 25°C.

[f] Measured on metal shell in Zone "A" (See *Dimensional Outline*).

[g] Continuous Commercial Service.

DIMENSIONAL OUTLINE - Dimensions in Inches (mm)

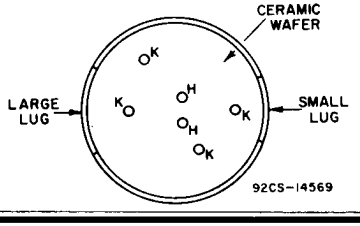


Note 1: Maximum outside diameter of 0.440" (11.17 mm) is permitted along 0.190" (4.83 mm) lug length.

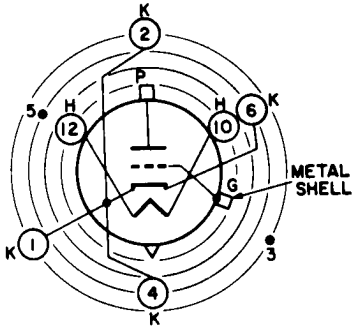
Note 2: Envelope temperature should be measured in zone "A".

MODIFIED BOTTOM VIEW

With Element Connections Indicated and Short Pins Not Shown



TERMINAL DIAGRAM (Bottom View)



INDEX = LARGE LUG
● = SHORT PIN—IC

Pin 1 - Cathode	Pin 6 - Cathode
Pin 2 - Cathode	Pin 10 - Heater
Pin 3* - Do Not Use	Pin 12 - Heater
Pin 4 - Cathode	Metal Shell - Grid
Pin 5* - Do Not Use	Top Cap - Plate

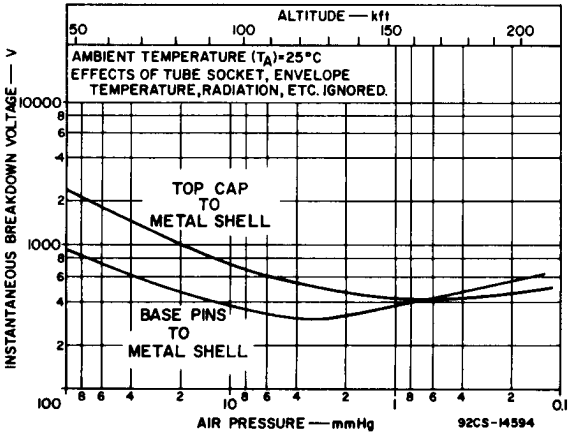
* Pin is of a length such that its end does not touch the socket insertion plane.

TYPE 8808 SOCKET AND CONNECTOR INFORMATION

SOCKET			
Mounting	**Body Material**	**Cinch Mfg. Co.▲ No.**	**Cinch-Jones Sales-Division Distributor No.**
Crimp	HALON□	133 67 90 040§	5NS-4
TOP-CAP CONNECTOR			
For Distributed-Constant Circuit	International Electronic Research Corp⊕ Therma-Link Retainer Part No. TXBE-032-031G, or equivalent		
For Lumped-Constant Circuit	Wakefield Engineering, Inc.● Semiconductor Cooler Type NF207, or equivalent		

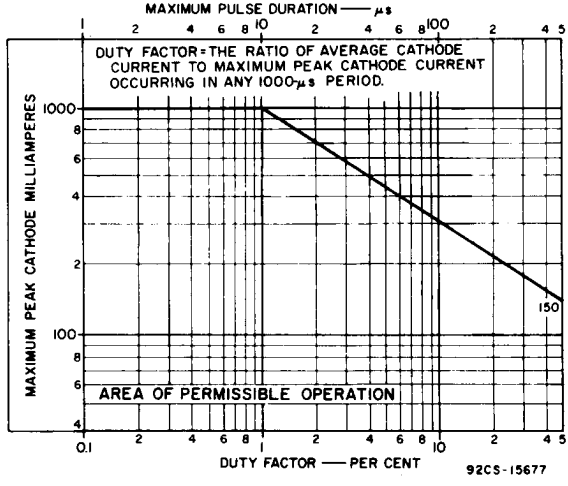
▲ 1026 South Homan Ave., Chicago, Illinois 60624.
□ TRADE MARK: Allied Chemical Corp., Morristown, N. J.
⊕ 135 West Magnolia Blvd., Burbank, Calif. 91502.
● 139 Foundry St., Wakefield, Mass. 01880.
§ This UHF heat-dissipating socket, or equivalent, is recommended to insure adequate electrical and thermal connection to the index rim.

BREAKDOWN-VOLTAGE CHARACTERISTICS

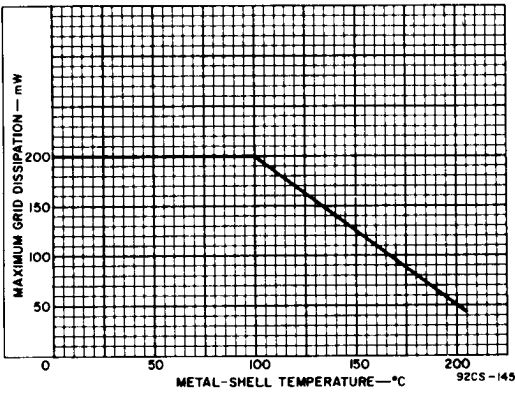


PULSE RATING CHART

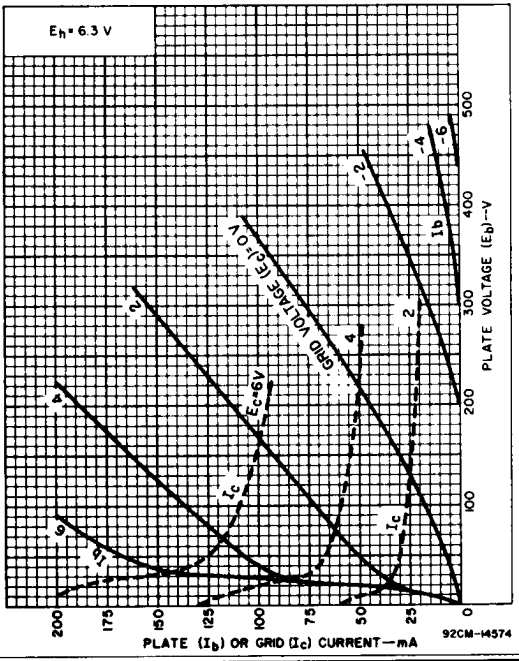
The peak cathode current is for a duty factor of up to 1% or pulse duration up to 10 μs, whichever is greater.



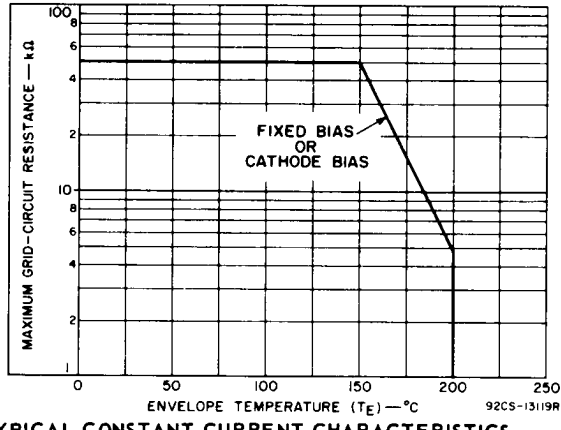
GRID-DISSIPATION RATING CHART



TYPICAL CHARACTERISTICS



GRID-CIRCUIT-RESISTANCE RATING CHART



TYPICAL CONSTANT-CURRENT CHARACTERISTICS