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TOSHIBA ELECTRON TUBE

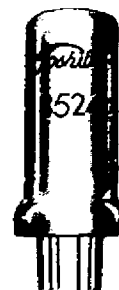
8524

SHARP-CUTOFF PENTODE

The Toshiba 8524 is a heater-cathode type sharp-cutoff pentode of micro metal miniature construction with metal shell and ceramic stem to adapt standard 8-pin subminiature socket.

It is designed particularly for use including gated amplifier circuits, delay circuits, mixer circuits at frequencies up to 400 Mc/s, and gain controlled amplifier circuits in military and critical industrial applications which may be subjected to severe shock and vibration.

In on-off control applications, the tube will maintain its emission capabilities after long periods of operation under cutoff conditions.



GENERAL DATA

ELECTRICAL :

Cathode: Coated unipotential

Heater voltage	6.3	V
Heater current	0.15	A

Direct interelectrode capacitances:

No. 1 grid to plate	0.015 max.	PF
No. 1 grid to all other electrodes	4	PF
No. 1 grid to No. 3 grid	0.15 max.	PF
No. 3 grid to all other electrodes	4	PF
No. 3 grid to plate	1.1 max.	PF
Plate to all other electrodes	3.4	PF

MECHANICAL :

Operating position	Any
Maximum overall length	1.082"
Maximum seated length	0.867"
Maximum diameter	0.434"
Bulb	Metal shell
Base	E8-9 (ceramic)

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MAXIMUM RATINGS; Absolute maximum values: Class A1 amplifier

Plate voltage	165 max.	V
Positive No. 3 grid voltage	30 max.	V
No. 2 grid voltage	155 max.	V
No. 1 grid voltage		
Positive bias value	0 max.	V
Negative bias value	55 max.	V
Plate current	11 max.	mA
No. 2 grid current	7 max.	mA
Plate dissipation	0.55 max.	W
No. 2 grid input	0.45 max.	W
Heater-cathode voltage		
Heater negative	200 max.	V
Heater positive	200 max.	V
No. 1 grid circuit resistance		
For cathode bias operation	1.1 max.	MΩ
Bulb temperature at hottest point on bulb surface	220 max.	°C
Altitude	60000 max.	Feet

TYPICAL OPERATION AND CHARACTERISTICS: Class A1 amplifier

Plate Voltage	100	100	V
No. 3 grid	connected to cathode ---		
No. 3 grid voltage	---	-1	V
No. 2 grid voltage	100	100	V
Cathode resistor	150	150	Ω
Plate resistance (Approx.)	0.11	0.05	MΩ
Transconductance			
No. 1 grid to plate	3200	1950	μV
No. 3 grid to plate	500	950	μV
Plate current	5.3	4	mA
No. 2 grid current	3.6	5.8	mA
No. 1 grid voltage for $I_b = 10 \mu A$ (Approx.)	-7.5	---	V
No. 3 grid voltage for $I_b = 10 \mu A$ (Approx.)	---	-8	V
Noise output voltage (Max.) *	60	---	mVac

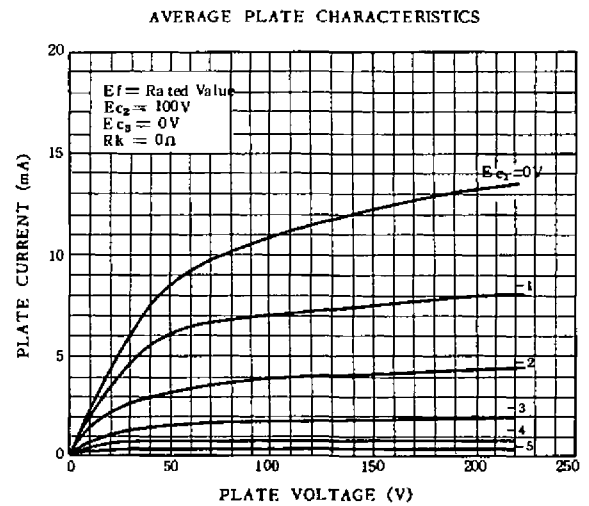
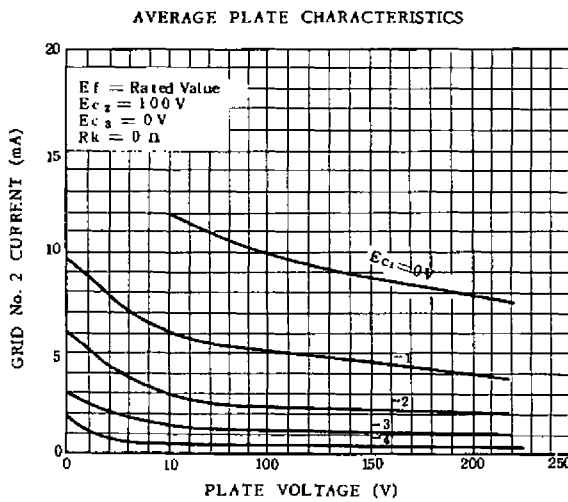
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Mixer operation

Plate voltage		100	V
No. 3 grid voltage	DC	0	V
	AC	15	V
No. 2 grid voltage		100	V
Cathode resistor		150	Ω
Plate resistance (Approx.)		0.32	M Ω
Conversion transconductance		1280	μU
Plate current		3.5	mA
No. 2 grid current		5.7	mA

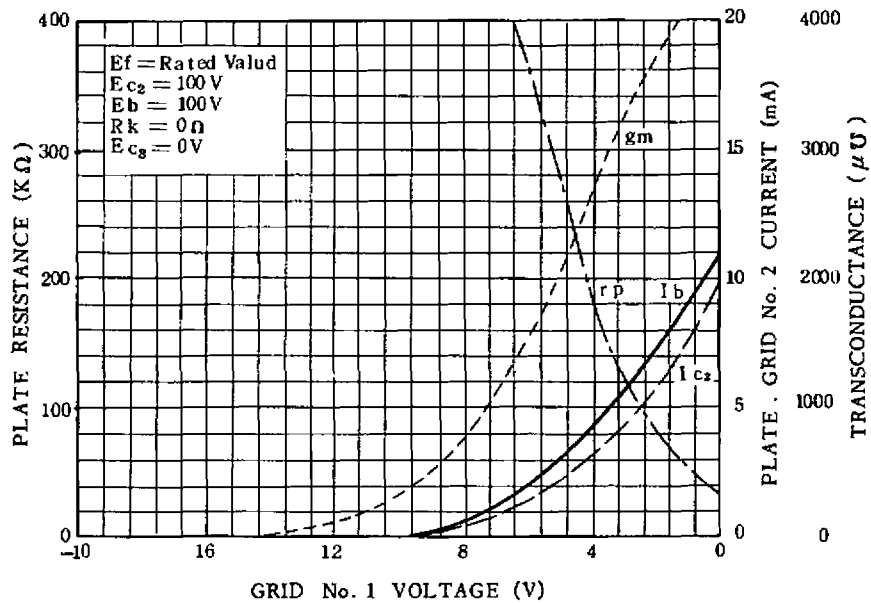
* Across to plate resistor of 10 K Ω , with applied vibrational acceleration of 15 G. at no cycles per second.



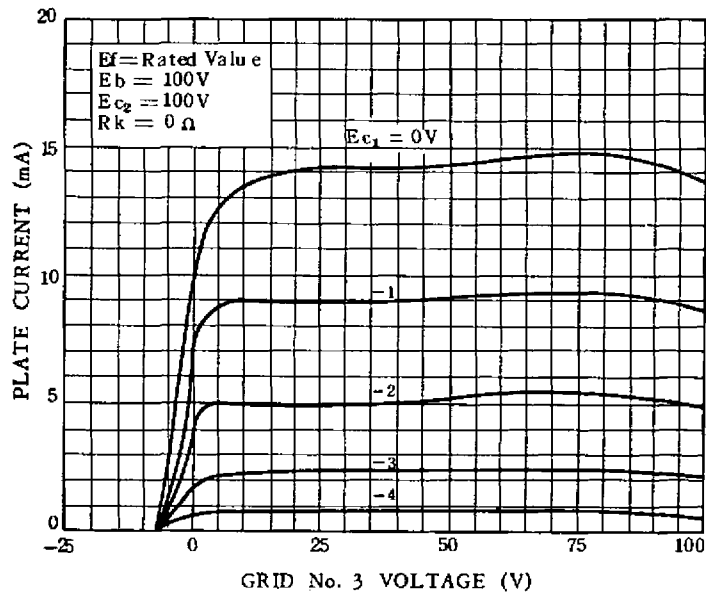
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AVERAGE GRID CHARACTERISTICS



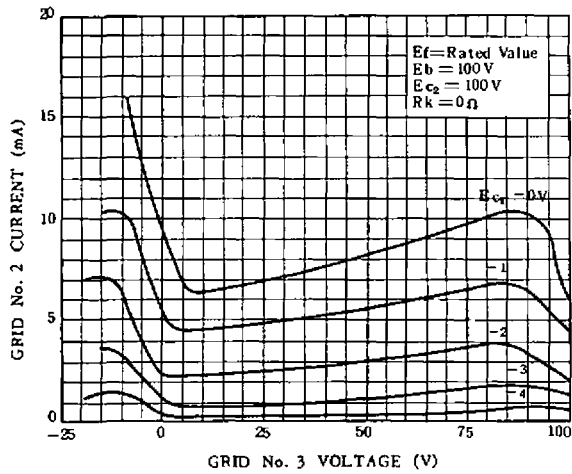
AVERAGE GRID CHARACTERISTICS



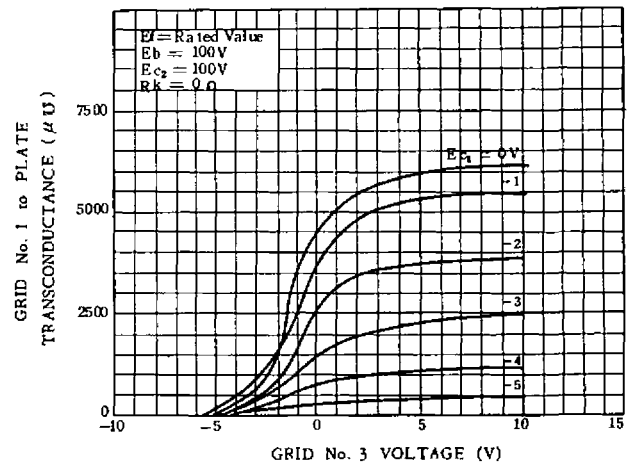
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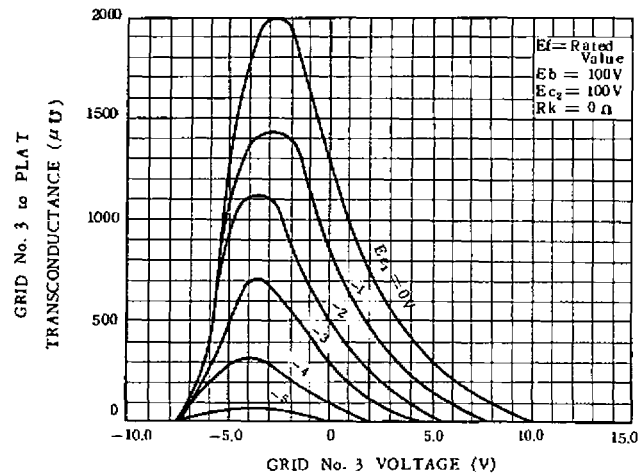
AVERAGE GRID CHARACTERISTICS



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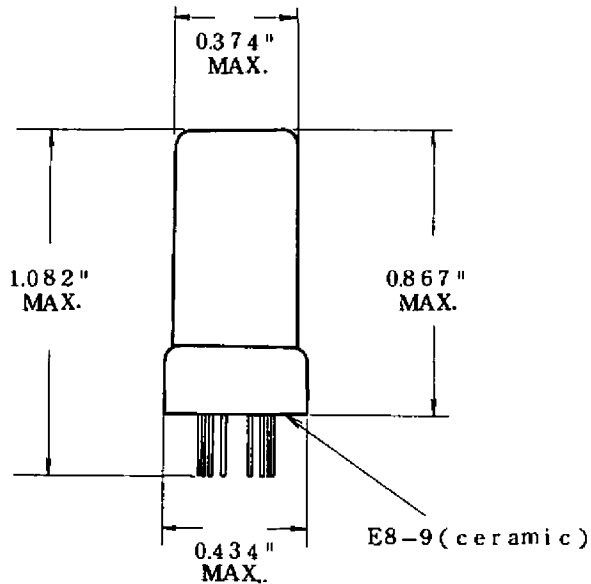
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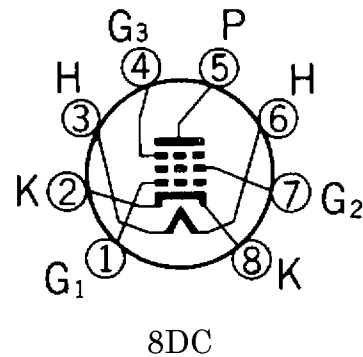
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8524
DIMENSIONAL OUTLINE:
Dimensions in Inches



8524
BASING DIAGRAM:
Bottom View



- Pin 1: No. 1 Grid
- Pin 2: Cathode
- Pin 3: Heater
- Pin 4: No. 3 Grid
- Pin 5: Plate
- Pin 6: Heater
- Pin 7: No. 2 Grid
- Pin 8: Cathode

All inquiries as to the data should be addressed to Tube and Semiconductor Division,
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