

5963
TWIN TRIODE

FOR COMPUTER APPLICATIONS

MEDIUM-MU

9-PIN MINIATURE

SEPARATE CATHODES

DESCRIPTION AND RATING

The 5963 is a miniature, medium-mu twin triode for use as a frequency divider in computer applications. When used in such "on-off" control applications, the 5963 will maintain its emission capabilities after long periods of operation under cutoff conditions. Intended primarily for computer applications, the tube is not in general superior to other types for conventional amplifier applications, nor should it be used in applications critical as to microphonics or plate-current unbalance.

GENERAL

ELECTRICAL

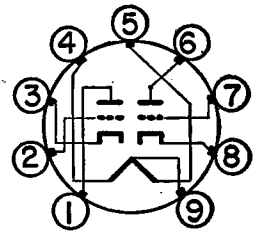
| | | | |
|--|---------------|-----------------|---------|
| Cathode—Coated Unipotential | Series | Parallel | |
| Heater Voltage, AC or DC | 12.6 ± 10% | 6.3 ± 10% | Volts |
| Heater Current | 0.15 | 0.3 | Amperes |
| Direct Interelectrode Capacitances, approximate* | | | |
| Grid to Plate, Each Section | 1.5 | | μmf |
| Input, Each Section | 1.9 | | μmf |
| Output, Section 1 | 0.5 | | μmf |
| Output, Section 2 | 0.35 | | μmf |
| Grid to Grid, maximum | 0.01 | | μmf |

* Without external shield.

MECHANICAL

Mounting Position—Any
Envelope—T-6 1/2, Glass
Base—E9-1, Small-Button 9-Pin

BASING DIAGRAM

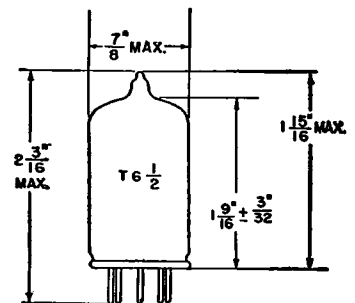


RETMA 9A

TERMINAL CONNECTIONS

- Pin 1—Plate (Section 2)
- Pin 2—Grid (Section 2)
- Pin 3—Cathode (Section 2)
- Pin 4—Heater
- Pin 5—Heater
- Pin 6—Plate (Section 1)
- Pin 7—Grid (Section 1)
- Pin 8—Cathode (Section 1)
- Pin 9—Heater Center Tap

PHYSICAL DIMENSIONS



RETMA 6-2

MAXIMUM RATINGS

ABSOLUTE MAXIMUM VALUES, EACH SECTION

| | | |
|---|-----|--------------|
| Plate Voltage | 250 | Volts |
| Positive DC Grid Voltage | 0 | Volts |
| Negative DC Grid Voltage | 100 | Volts |
| Peak Negative Grid Voltage | 200 | Volts |
| Plate Dissipation | 2.5 | Watts |
| Grid Input | 0.5 | Watts |
| DC Cathode Current | 20 | Milliamperes |
| Peak Cathode Current | 100 | Milliamperes |
| Heater-Cathode Voltage | | |
| Heater Positive with Respect to Cathode | 90 | Volts |
| Heater Negative with Respect to Cathode | 90 | Volts |
| Grid Circuit Resistance | | |
| With Fixed Bias | 0.5 | Megohms |
| With Cathode Bias | 1.0 | Megohms |
| Bulb Temperature at Hottest Point | 120 | C |

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A₁ AMPLIFIER, EACH SECTION

| | | |
|-------------------------------------|------|--------------|
| Plate Voltage | 67.5 | Volts |
| Grid Voltage | 0 | Volts |
| Amplification Factor | 21 | |
| Plate Resistance, approximate | 6600 | Ohms |
| Transconductance | 3200 | Micromhos |
| Plate Current | 8.5 | Milliamperes |

COMPUTER SERVICE, EACH SECTION

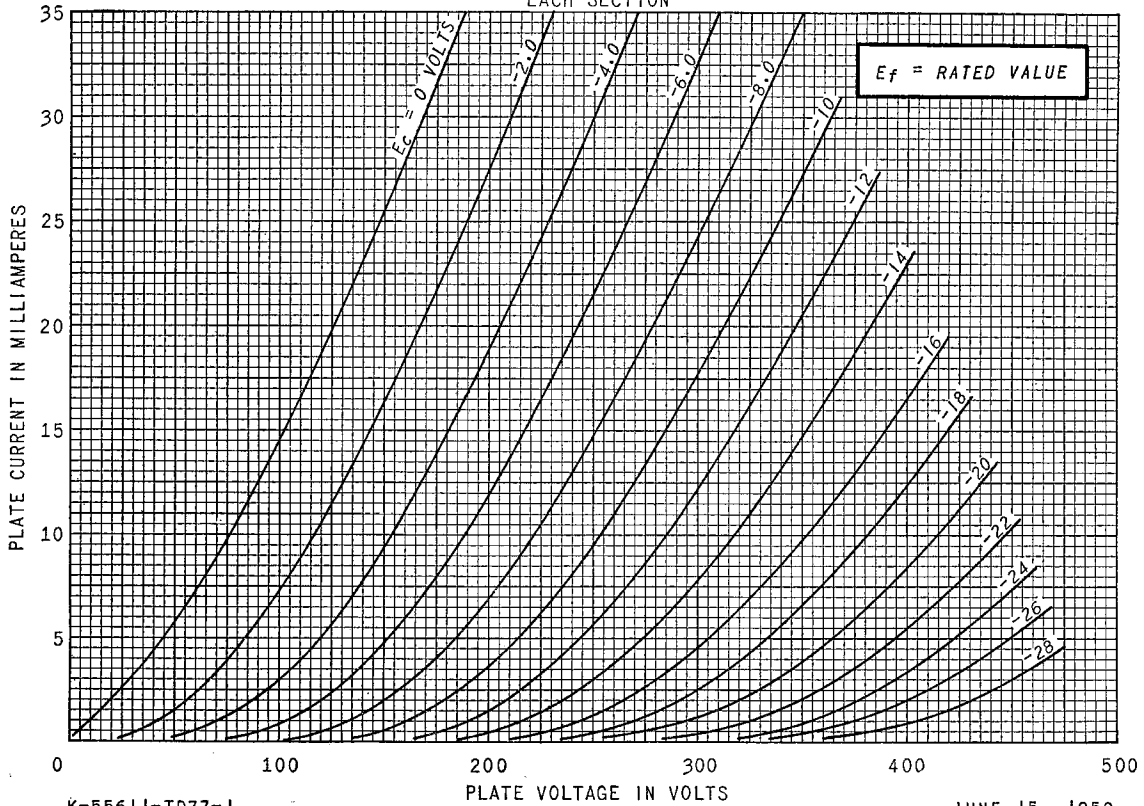
| | | | |
|-------------------------------|--------|--------|--------------|
| Plate-Supply Voltage | 150 | 150 | Volts |
| Plate Load Resistance | 20,000 | 20,000 | Ohms |
| Grid-Supply Voltage | -15 | 0 | Volts |
| Grid-Circuit Resistance | 47,000 | 47,000 | Ohms |
| Plate Current, maximum | 0.050 | ... | Milliamperes |
| Plate Current, minimum | ... | 4.6 | Milliamperes |

INITIAL CHARACTERISTICS LIMITS

| | Minimum | Maximum | |
|--|---------|---------|--------------|
| Zero-Bias Plate Current, Each Section | | | |
| E _f = 12.6 volts, E _{bb} = 150 volts, R _L = 20,000 ohms, E _{cc} = 0 volts, R _g = 20,000 ohms, R _g = 47,000 ohms | 4.6 | 5.4 | Milliamperes |
| Plate Current Cutoff, Each Section | | | |
| E _f = 12.6 volts, E _{bb} = 150 volts, R _L = 20,000 ohms, E _{cc} = -15 volts, R _g = 47,000 ohms | 0 | 50 | Microamperes |

AVERAGE PLATE CHARACTERISTICS

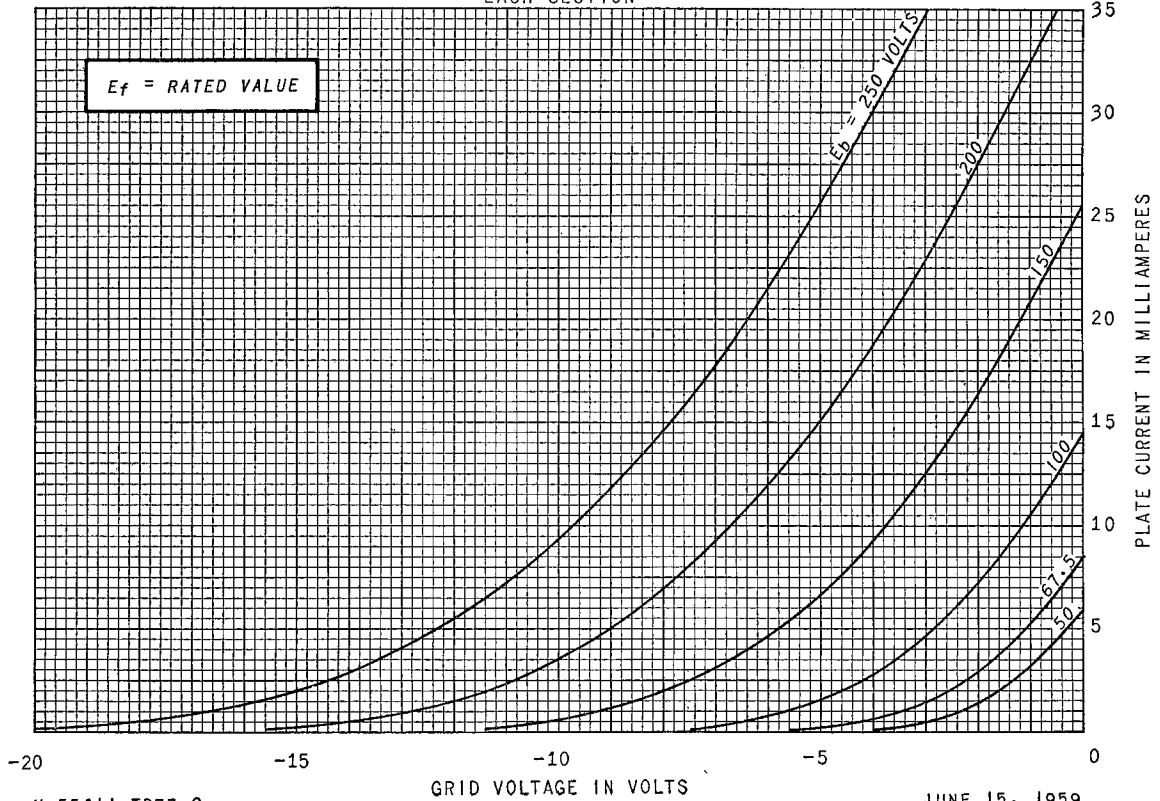
EACH SECTION



JUNE 15, 1959

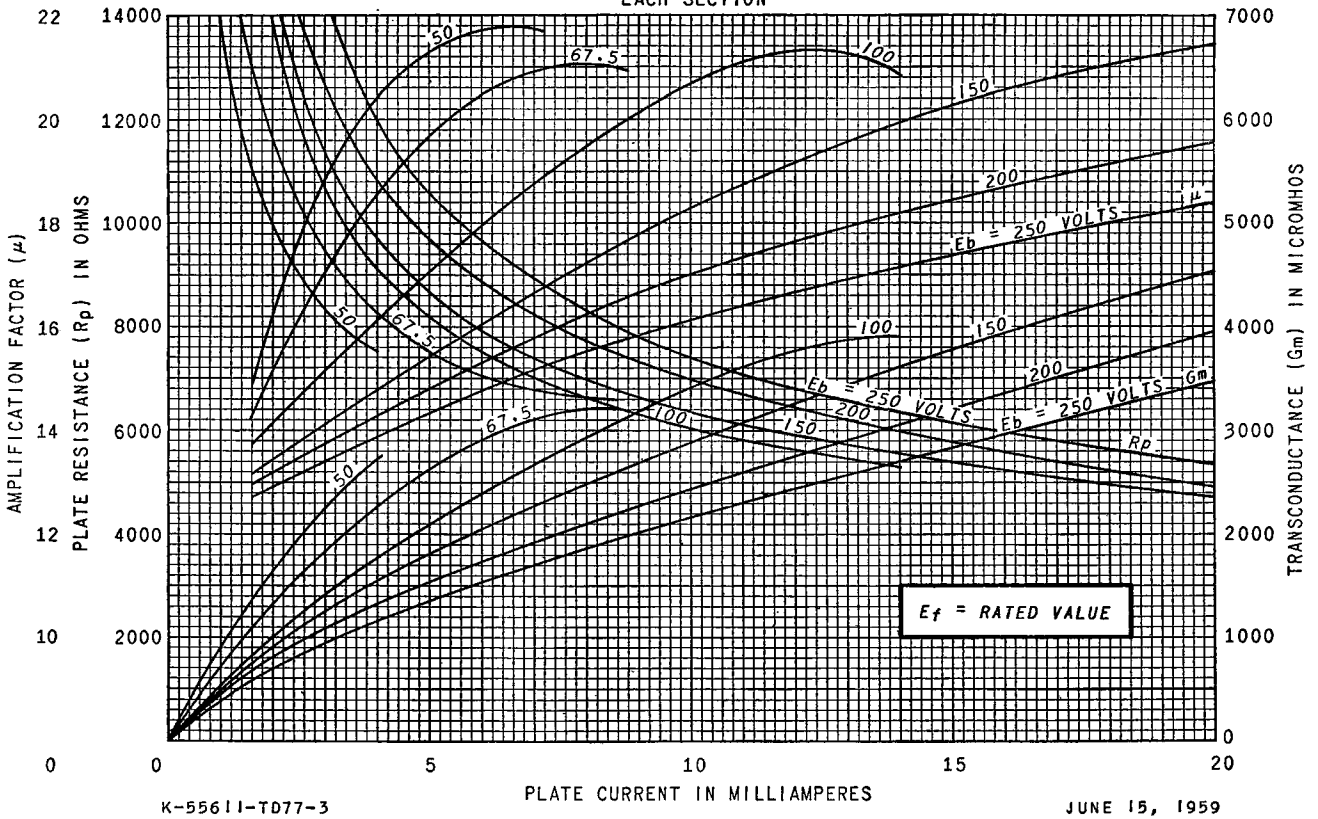
AVERAGE TRANSFER CHARACTERISTICS

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AVERAGE CHARACTERISTICS
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